The Builder.

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Mr. Flinders Petrie's Exhibition.

FOR several years past, except last year, a special exhibition has been held in London of objects that have been buried in the soil of Egypt for more than two, and not unfrequently, for more than three thousand years.

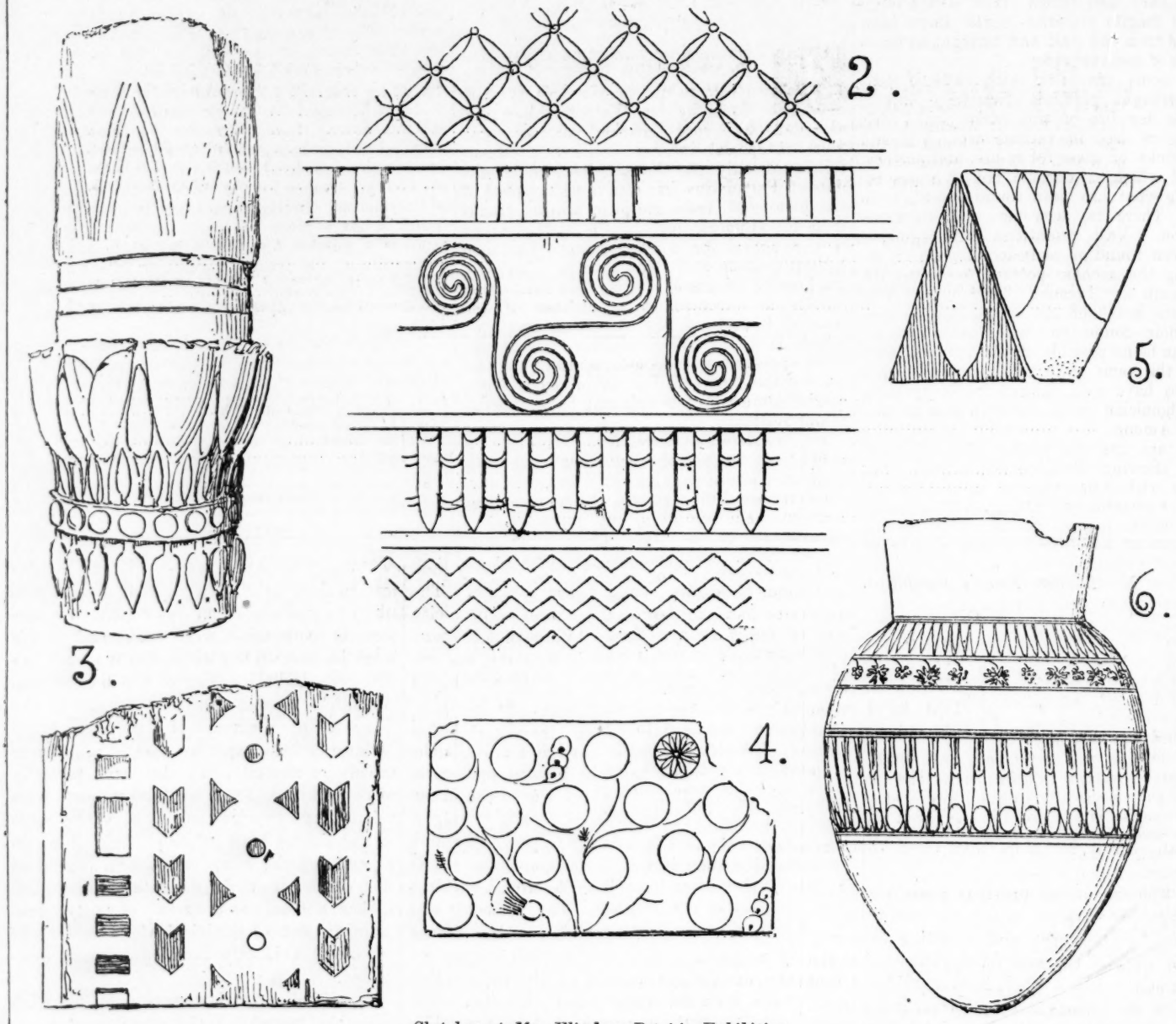
The exhibits of previous years have done important work in lifting the veil from the long-forgotten past, and revealing distinctly the state of the arts on the sites and at the periods noted. When it is considered that these exhibitions have all been inaugurated by one enthusiastic man, who has actually found the objects during the previous year, our interest, excited by the art value of the objects themselves, cannot but be greatly enhanced by the display of prudent investigation and hard work, the evidences of which are before us at every turn.

Mr. Flinders Petrie's success, which, for a year or two may have seemed to a casual observer as the result but of fortunate chance, now appears as the result of careful study beforehand, for selection has evidently been made of each site excavated, with a view of obtaining from it some historical evidence, or some phase of art different from that which other sites might be likely to yield.

For many years Egyptologists have recognised a peculiar style of art different from what has been found on other ancient sites, in the objects recovered from the ruined mounds known by the modern name of Tel-el-Amarna, which are situated on the east side of the river Nile, about 180 miles to the south of Cairo, the remains being on a wide plain extending from the river to the Libyan mountains, where, at a long distance from the site of the city, a great many tombs excavated in the rock have been recognised and examined. The city has been destitute of modern buildings, and only covered here and there by the feeble remains of modern villages of small size, which have never been sufficiently large to totally destroy the ancient works buried beneath them. The site has long been known as that of a city founded by Amenhotep IV. about 1400 B.C., and where,—called heretic by some, and reformer by others,—he set up the worship of Aten, the solar disc, which was likely to have succeeded to Ammon as the National God, if this new capital and the cult that he therein founded had not had an ephemeral existence. But the short life of the King, and rapid changes in succeeding reigns, caused the new foundation to pass away more rapidly than it was formed, and the whole city appears to have been destroyed within a generation of his death. Thus transient was the reformation of its founder, but the change of religious system and a fresh impress on the art designs remain on the objects that have been recovered from the site. The charming little statuette of Amenhotep IV., in steatite, now in the Louvre, remarkable for its natural treatment, came from here. So did the representation of the adoration of the solar disc, figured by Prisse d'Avennes in his great history of Egyptian art. A ray of life and light proceeds from the disc to each figure in the composition, terminating in an open hand. Prisse figures also an equally remarkable painting from one of the tombs, which gives a geometrical elevation and plan combined of a palace, the architectural lines being intermingled with figures of the trees and shrubs which grew within the enclosures. It is portrayed without regard to the stiff conventionalism of an earlier period, agreeing in this respect with all the objects found on this site. A bas-relief of the queen serving Amenhotep deserves passing mention. It is remarkable as showing the whole of the figure, while the garment which doubtless actually covered it is represented wholly *behind* it. No systematic excavations have ever yet been made on the site, although many partial ones have been attempted, all of which appear to have produced good results. It was through some of these that Prisse was able to give the plan of certain of the buildings, showing the width of some of the streets, parallel and at right angles to the Nile, and to record the existence of a vast enclosure of rectangular form in which stood the great Temple of the Solar Disc.

These discoveries were sufficient, doubtless, to show to Mr. Petrie that the site was likely to produce important results if a systematic exploration were made, and to this work he devoted himself in the winter of the past year, and the spring of the present one. Attention was also drawn to the site by the discovery of the tomb of King Amenhotep far away in the mountains, eight miles from the site of this city. In this tomb, partially explored by the Egyptian Government, were found fragments of the Royal sarcophagus and numerous wall paintings (one of which represented the King and Queen lamenting the death of their daughter), but much broken, not only as the result of hasty workmanship, but of fanatical violence, for the tomb had evidently been opened and desecrated.

Mr. Flinders Petrie entered upon his work with the knowledge that the date of whatever might be found would be well assured, and the results show the accuracy of recorded history. The objects met with are all of the period of the founder, with hardly a single exception, and traces of the overthrow of the city were abundant. It appears from the records that the founding of the city began in the fifth year of the founder's reign, and that the works were carried out in twelve years. He died in the eighteenth year, and destruction appears to have fallen on the city after three short succeeding reigns. Its name has not been recorded, and, strange as it may appear, nothing has yet been found among the ruins to afford a clue to it. The excavations have revealed the site of the royal palace, and at right angles, and in close proximity to it, traces of the temple have again been met with. The town was adjacent to both buildings. Several ancient roads converge on to the site, and, at the distance of about three miles, several remarkable steles are carved on the rocky cliffs, a cast of one of which is in the exhibition. It records the founding of the city 3,300 years ago. One of the most noteworthy of the discoveries is that of a painted floor, in what was the harem of the palace. It formed the floor of a large hall, 60 ft. long by 20 ft. wide, and the peculiar style of the art works of the city is well illustrated by it. The pattern is not symmetrical, and one side appears to have been the work of



Sketches at Mr. Flinders Petrie's Exhibition.

one artist, the opposite side by another, the whole being a mass of foliage, flowers, birds, and animals, some of the latter being of much freedom of drawing, showing no little knowledge and power of expression. The foliage is in the style of the painting from one of the tombs already referred to, and the whole composition is a remarkable departure from the previously existing art. This pavement has been roofed over since its discovery, and is now preserved from injury by a guard of soldiers.

The exhibition is held at No. 4, Oxford-mansions, and is contained in three rooms, where the objects found are arranged in glass cases, and displayed as well as the limited space will admit. On entering, the visitor familiar with Egyptian work is struck by the difference of type visible in many of the articles. There are a vast number similar in general style to what are found elsewhere, and a casual glance would tell that all were Egyptian. Yet the freedom of the designs is at once apparent, while certain differences of execution are apparent here and there. For instance, incised work, not unusual elsewhere, is abundant here. So is inlaid work. But the beautiful finish of some of the fragments of sculpture, coupled with admirable modelling, will command attention. Some of the figures have almost the purity of Greek works, remarkable when the remote antiquity of these objects is considered. The visitor must regret that, by the regulations of the Egyptian Government, only fragmentary works are allowed to be removed; and hence, the first appearance of the exhibition is somewhat disappointing, and what it has to teach has to be sought for in portions of ancient works rather than in complete specimens.

Turning to the architectural remains as being of most interest to our readers, several objects may be noted. These are fragments of columns covered with reeded patterns, some being of large size, fully 5 ft. in diameter. Others are banded with rows of hieroglyphics carved in very bold and effective fashion. Another has the heads of two storks remaining in high relief above a reeded pattern, as if the birds had been carved in them entirely; quite a new departure in Egyptian work.

Some other columns have had bands of delicately-wrought figures in procession. Another fragment of a column has the solar disc with its rays extending to various objects and cartouches arranged in proximity, and this figure, the emblem of the new and special cult of the city, is found on more than one of the fragments. Another column has been formed entirely of green glazed terra-cotta, built up in small sections.

Some sandstone slabs have a rather rough pattern of inlay work of red, green, and white vitrified pottery, and there is a special show-case filled with highly-suggestive specimens of various other kinds of inlaid work of vitrified pottery, not only designed for insertion in stone, but in earthenware vases and such like. Some of these patterns are very effective, and are capable of being reproduced for modern work. One of the earthenware tiles, intended probably for wall decoration, is inlaid with a pattern of embossed daisies and thistles, of natural colours, the branches and stems being painted on the surface of the tile. But this system of inlaying has been applied to some larger works, and there is just a fragment, and no more, of a piece of polished granite inlaid with white alabaster.

There are many fragments of architectural cornices and other portions of building, mostly with incised patterns and inscriptions sunk in square and coloured. Traces of colour are, in fact, apparent on almost all the works. Some of the objects are of granite, but the greatest number are of a fine-grained limestone, which is capable of being delicately carved.

We have already referred to the columns with bands of figures. From the same locality come the fragments of columns carved with a very delicately-worked pattern of involved scrolls of archaic type, zig-zags, and network. A small column is decorated with some pretty patterns of lotus leaves and buds.

The painted floor, still remaining *in situ*, is illustrated by a capital drawing made by Mr. Petrie, and by full-sized sketches of the decorations, in colours. Elsewhere is a large piece of wall-painting. When perfect, it represented the king and queen with servants attending, and the infant princesses seated on cushions. But only portions of the figures now remain, although there is a great amount of minute and elaborate detail. It is painted

on a ground of friable Nile mud, prepared only by a coating of white, on which the subjects have been drawn. How such a large mass of fragile material could have been detached from the wall and brought so far is a matter of some surprise.

The rooms are fitted with cases of delicately-wrought personal ornaments, objects of every day life of this early period, frit and colours used in various arts, glass and small sticks of glass for re-use, and pottery, some of which is curious, but of a type resembling what has been found elsewhere in Egypt. There is, however, a remarkable exception. Vast quantities of fragments have been found of early-looking make, resembling the archaic pottery found by Dr. Schliemann at Mycenæ. They come from the waste heaps of the Royal Palace, and, from their connexion with dated works, there can be no possible doubt but that they are of the same date as the city. Other examples have well defined forms agreeing with Phœnician work both in colour and form. Among the remaining noteworthy objects are the fragments of Cuneiform tablets, showing that correspondence was kept up with Asia; various moulds for formation of patterns for inlay; a whole collection of objects in cast plaster for use in the decoration of buildings; a case of worked and serrated flints, showing that such objects were in use in the 18th dynasty; sculptor's tools, stone weights, and a vast number of other articles.

Many of the inscriptions give the names of the king and queen, the king being designated by his later name of Khuenaten, proving that he and the queen did not change their names and adopt the adoration of Aten until after their marriage.

The foregoing will show that this exhibition is one of unusual interest, and especially so since the objects are unique. Mr. Petrie may be congratulated upon the success of his labours, and it is to be hoped that his ill health, brought about by his devotion to his work, may be speedily improved.

The exhibition is announced to remain on view until October 15.

The sketches represent: Fig. 1, part of the shaft of the lotus column already mentioned. It is 1 ft. 10 in. high by 9 in. diameter in the broadest part. Fig. 2 is part of the pattern on one of the limestone columns from the palace. The pattern is very minute and delicate, and there are several variations. The network around the upper part of the shaft is compared by Mr. Petrie to that of the columns of the Temple of Jerusalem. The columns banded with processions of minute figures came from the same place. Fig. 3 is one of the most perfect of the fragments of constructional inlaid work, although not the most elegant. It is in sandstone, which has been sunk in for about half an inch and filled in with the inlay, which is of red and blue vitrified terra-cotta. Fig. 4 is one of the wall tiles referred to, 4 in. by 6 in. The daisies have fallen out, but one is sketched from a loose example. The colours are natural. Fig. 5 is a neatly-worked pattern for inlay, also of vitrified terra-cotta. The lotus flower is of yellow green, terminating in chrome yellow, the upper part being blue, white, and grey. The alternating pattern consists of a white lotus-bud on a dark reddish-brown ground, all the colours being very fresh and effective. The height is about 3 in.

Fig. 6 is an almost perfect vase 13¼ in. high, of bright red pottery, having a pattern of cornflowers and seeds outlined in black and filled in with blue, as are also the other patterns, the dark portions being black. These examples, sketched from the most perfect of the objects, but not at all from the most beautiful, give a new insight into the state of the arts and the production of artistic work in the remote past of three thousand three hundred years ago.

Messrs. Clark, Bunnett, & Co. (Limited), engineers and founders, of London, New York, and Paris, ask us to mention that there is no truth in the rumour current of their intention to discontinue business.

"EXCAVATIONS BY THE AMERICAN SCHOOL AT THE HERAION, NEAR ARGOS."

It has been for some time known that the excavations carried on at the Heraion up to the end of last April by Dr. Waldstein had been attended by very marked success, and were of special interest as likely to throw light not only on the architecture of the date of Polycleitus, but also on that period of the history of Greek sculpture which extends from the Homeric Age to the sixth century B.C., a period for which evidence has been hitherto scanty and fragmentary. The early publication of some of the most interesting results is expected in a number of the Annual Report of the American Institute, which is to be issued shortly. Meantime there appears a provisional report in the last issue of the American Journal of Archæology, a brief summary of which may be interesting to our readers.

Dr. Waldstein's excavations, it may be remembered, are not the first that have been made on a site always known to be promising. As early as 1854, Messrs. Rhangaubé and Bursian made tentative, but quite fruitless excavations in the place where it is now known the second temple lay. Unhappily, or perhaps happily, as the work has now fallen into most competent hands, they trenched no deeper than the tops of the extant walls, and all traces even of their work have now disappeared. Pausanias, in his account of Argos (II. 17) devotes a whole chapter to an account of the two temples of Hera at Argos,—temples which were the main centre of the worship of the goddess from pre-historic times. He tells how the earlier temple, situated on the higher part of the hill, was burnt by the carelessness of a priestess, Chryseis, who fell asleep, and her lamp set fire to the building. This was in 423 B.C. The second temple was put in hand almost immediately afterwards, but a site was chosen a little further down the hill. The architect was Eupolemos, an Argive. The temple, begun in 420 B.C., was completed in 416. The great temple-statue was from the hand of Polycleitus, and the general supervision of the sculptured decorations fell to him.

We begin with the earliest temple. It has only been provisionally excavated. It was found to be built on a platform, which was supported by polygonal walls. Trenches were dug, and the ancient polygonal pavement was found; also thick layers of burnt wood, which confirm the account of the destruction of the temple. With this ancient temple may be taken another,—and, to our minds, the principal,—discovery made, the site of which is near the second temple. At its west end the ground was dug away to the depth of about 30 ft., and below this the excavators came upon a thick stratum of black earth, which contained a vast number of objects belonging to a primitive period of Argive art. Dr. Waldstein himself thinks, and he is right, that these scarcely rank inferior in interest to the Tiryns and Mycenæ discoveries. They are certainly their fitting and necessary sequel. None are later, he holds, than the sixth century. They consist of terra-cotta figurines, vases, marble heads, bronzes statuettes, miscellaneous objects in bronze, gold, silver, ivory, amber. Surely, among these there will be some that will throw light not only on early Argive art, but also on the early cultus of Hera,—the cultus, possibly, before she became the accredited wife of Zeus, when she was the cow-goddess Io.

For architectural interest the second temple, in which the excavators speedily concentrated their efforts, may rank first. This has been almost entirely cleared. The foundation walls were laid bare to a depth of 5 inches, and this resulted in the discovery of so many architectural fragments that the temple, it is thought, can be accurately restored (on paper). It is interesting to find that the architectural fragments bear a certain resemblance to those of the remarkable tholos at Epidaurus, which is now usually credited to the younger Polycleitus. It is the resemblance moreover of earlier to later work. The closest analogy is reported to be the Erechtheion at Athens, but the exact points of resemblance are not yet stated. Of the many fragments of sculpture most seem to have belonged to the pediments. Conspicuous among these fragments is a life-size marble head, probably of Hera, and in perfect preservation,—a head which is naturally of the first importance for the study of the style of Polycleitus. In the interior foundation was found a large piece of a metope with the torso of a warrior fighting. The sculptured decoration of the temple, Pausanias tells us, related to the birth of Zeus and the battle of the gods with the giants, and the taking of Troy.

Finally, below the two temples the excavators found a terrace upon which were remains of several buildings not mentioned by Pausanias,—*i.e.*, a large stoa, extensive aqueducts, and a third temple. These, with the complete unearthing of the first temple, are reserved for the next season, shortly to begin.

NOTES.

The Labour Parliament has been followed by the Commercial Parliament, the Associated Chambers of Commerce having been in conference at Newport (Mon.) last week. The subjects discussed have nearly all been on the agenda before,—rating of machinery, technical and commercial education, railway and postal facilities, the decimal system, and so on. With regard to the last-named subject, a Board of Trade official who was present remarked that he had no mandate from his Board, and that the initiative must come from the people, but that he himself was decidedly in favour of the early introduction of the system. It goes without saying that the conference was of the same opinion, and passed a resolution to that effect. Thus there has now within a month been a mandate from both capital and labour,—the voice of this conference and of the Trades Unions Congress being unanimous,—and it may be asked what more is required to set the wheels in motion? Who are the "people" from whom it is essential that the demand for the desired reform should emanate? Of course the Parliamentary official would answer,—"the electorate"; and thus the Trades Unions on the one hand, and the Chambers of Commerce on the other, must set about influencing the electors in their respective spheres. The debate on this question at Newport was on precisely the same lines as that of two years ago,—to which we alluded a fortnight since,—Mr. Spicer, M.P., suggesting that the most important point to be first secured is the encouraging of the children in the elementary schools to take an interest in and understand the subject. The law relating to Building Societies was also discussed, Imperial penny postage strongly advocated, and the proposal for universal free trade between the colonies and the mother country considered. The debate on the latter question resulted in the adoption of the following resolution—"That a commercial union between the Colonies and the Mother Country would tend to promote the permanence and prosperity of the Empire. This association would, therefore, urge her Majesty's Government to take every possible opportunity of furthering this object." The original resolution was of rather wider scope, but the curtailed form as just given appeared to commend itself to the majority of the members.

We quite concur in the opinion of the London County Council, as reported in another column, that it is time that Vauxhall Bridge were rebuilt, but it is with great regret that we notice the inclination to recommend a steel bridge with granite piers instead of a solid and monumental granite

structure. In regard to the mere pecuniary aspect of the matter, there can be no doubt that the granite bridge would be the more economical in the long run. The economy would not be felt in the present generation, certainly, but is it not something to hand down to other generations a solid monumental structure which will last for centuries, rather than a metal bridge which will necessitate a running expenditure for painting and repairs, and which will probably have to be pulled down and rebuilt at a time when the granite bridge would be as good as new? But in an architectural sense the granite bridge is amply worth the extra cost, for the dignity which such a work confers on the river and the city, and the permanent satisfaction which it gives. Look at London and Waterloo Bridges, those great works which have been the admiration of the world since they were erected, and see what poor things the hybrid bridges of Blackfriars and Westminster appear in comparison with them. The Metropolitan Board of Works, amidst all the melancholy history of its declining days, earned our gratitude, even in those latter days, for the fine and enduring monument they left us in the shape of the beautiful bridge at Putney; a work which has been appreciated, too, as it deserved: over and over again we have heard the expression, not merely from architects but from people of all sorts of professions, of satisfaction that the Board had had the spirit to build a monumental bridge at Putney. Let the County Council at least emulate the Board of Works as far as that; let them promise us a monumental bridge worthy of a great capital and a world-renowned river, and they will not find themselves without substantial public support and appreciation.

AS there appears to be some attempt to get up a protest against what is intended or supposed to be intended to be done in preparing the Chapel Royal at Whitehall to form part of a United Service Institution, it may be as well to state the facts. Nothing is to be done at all to the chapel or banqueting-hall (by whichever name we call it) except to break through a couple of doors on two levels in the south side of the building, in what is merely a brick wall. Messrs. Aston Webb and Ingress Bell are preparing plans for the additional buildings, which we have seen, and which are carefully designed so as to avoid as much as possible any appearance of interfering with the architectural design of the existing building. A block of buildings containing committee and other rooms, a lecture theatre, and library, has been designed to stand south of the banqueting-hall, and has been purposely kept as an entirely distinct design in treatment and in the levels of its cornices, stringcourses, &c., while it is further cut off from the existing building by a plain piece of wall of a few feet in width, set considerably back from the line of the banqueting-hall, and entirely without what are sometimes called "architectural features," so as to leave the return of the old cornice, &c., undisturbed, and separate the new building entirely, architecturally, from the old one. There can be no pretext, on the face of the plans as prepared, of anything being done to interfere with or spoil the banqueting-hall. In regard to this latter we may mention, what we believe few people are aware of, that the banqueting-hall architecture is not as built and left by Inigo Jones; it was rebuilt in the earlier part of this century by Soane, to a great extent at all events, and it seems uncertain whether Soane took down and replaced the actual stones, or whether he only rebuilt the design, wholly or in part. The masonry must at all events have been a good deal re-worked on the face, if the actual stones were reset; so that it can hardly in any case be of the same interest as if it were an intact building by Inigo Jones.

A PROCESS of sewage purification on a small scale has been started by Mr. W. D. Scott Moncrieff, C.E., at his house at Ashtead, which has the recommendation of novelty, both as to the principle on which it is based and the method of carrying it out. Availing himself of the generally-accepted theory by scientific men of the existence of putrefactive bacteria in all dead animal and vegetable matter undergoing decomposition, Mr. Scott Moncrieff has devised a filter in which he believes this process is encouraged, and the destruction of the organic impurities in the sewage is hastened and completely effected. His filter-bed is a long trough 15 ft. long, 3 ft. deep, and 2 ft. 6 in. wide. The sewage is passed into the bottom, and has to find its way upwards through successive layers of flint, coke, and gravel, which materials, he believes, form a nidus for the putrefactive micro-organisms. Mr. Scott Moncrieff claims success for his process, but sanitarians will require some more searching tests than the use of the naked eye and the nose. The practical details of the scheme will no doubt be closely scrutinised, and receive modification where necessary, and the chief point for our consideration is the soundness of theory on which the process is based. The existence of putrefactive bacteria has been long admitted, and the surgical process called "Listerism," which has led to such remarkable improvement in surgical practice in recent years, is based on the principle of excluding these bacteria from open wounds. But there is a good deal of difference between preventing their action and turning it to good account. Mr. Scott Moncrieff is under the impression that these micro-organisms entirely destroy and remove the solid matter of the sewage, and that his filter does not get choked; but apart from the fact that sewage contains a large quantity of inorganic matter which constitutes the sludge of town sewage, and to a less extent of the sewage of private houses, the organic matter is not destroyed by bacteria but changed into other substances, some of which are exceedingly potent animal poisons. It is, indeed, we believe generally accepted in the medical profession that it is these poisons (known as "ptomaines," "enzymes," &c.) which cause diseases, and not the bacteria and ferments which give rise to them. These substances, together with numerous new chemical elements, pass off in the effluent water, and if sufficiently concentrated might produce serious disease in any one drinking it. The great evil of our underground drains and cesspools is the formation and concentration of the products of putrefaction produced in this way by bacteria and putrefactive ferments; and, although we feel great interest in Mr. Scott Moncrieff's experiments, we are equally bound to call attention to the weak places in his theory. There is one encouraging feature which we must note in favour of this process, namely, that the germs of typhoid and of cholera,—the principal water-carried diseases,—are destroyed by the products of the putrefaction of sewage, and they would be less likely to escape a filter such as the one described than when spread on a sewage-farm, or allowed to escape without chemical destruction into streams and wells. Mr. Scott Moncrieff expects very important results from his system, and is establishing a laboratory at his house for further systematic experiment and investigation; so that we shall hope to hear more of it.

THE interesting letter from Hamburg, published in the *Times* of Tuesday, fully accounts for the cholera there, in its account of the water supply which is pumped from the Elbe, and drunk unfiltered, after a short deposition in settling-tanks. It seems astounding to read of such a thing in a large European city in these days; and now that such a terrible Nemesis has come on the Hamburgers probably something will be done to hurry on the completion of new waterworks and supply the city with wholesome water. But they had much better give up taking it out of the Elbe altogether, if they have (as we believe) sufficient sources of supply of another kind.

THE report of Mr. Alexander, the Sanitary Inspector for St. Leonard's Shoreditch (incorporated with the report of the Medical Officer of Health, Dr. Allan), contains some notes and statements in regard to school sanitary appliances which deserve attention. The special point which arises out of it is as to the use of trough water-closets for schools, and the Sanitary Inspector's observations in regard to those at the Shap-street Board School. The Inspector reports that,—

"On inspection of the sanitary arrangements of these schools, they were found to be very insufficient, and to be of the most defective character. Thus for about 400 infants there were only four closets; for about 300 boys, four closets; and for about 300 girls, four closets also.

Each of these three ranges of closets were fitted with iron troughs, which were said to be flushed twice daily. As a matter of fact, it was found on each of several inspections that the walls of the troughs were encrusted with fæcal and urine deposits, the beds of the troughs largely filled with excrementitious matters, and the atmospheres of the closets loaded with stench of the foulest description.

The w.c.'s of the male and female teachers being defectively drained were periodically stopped, and, in removing the recurring blockages, the seats had been broken, and were dangerous to sit upon.

The caretaker was under instructions *to be very economical in the use of water*, and, as a result of that instruction, it was found on each inspection that water was not only shut off from the closet-troughs, but also from the lavatories, and the drinking-fountains in the play-grounds.

These conditions being reported to the Vestry, a resolution was carried directing notice to be served, requiring the School Board to abolish the foul troughs, and to provide improved and augmented w.c. accommodation, and to provide a continuous supply of water to drinking-fountains, lavatory basins, and closets."

The School Board submitted plans for the erection of new water-closets in sufficient number, but contemplated the re-introduction of troughs, and a notice was served requiring each closet to be fitted with a separate trapped soil-pan. The Board appealed to the County Council, with the result that the trough-closet was allowed on condition of a flush at every half-hour during the day. The Inspector calculates that this means an expenditure of 3,350 gallons per day in flushing, on the estimate of the architect that ten gallons per seat is required for each flush. At the hearing of the appeal it was urged, on behalf of the Board's view, that the pan system was not suitable to a school of this class; meaning we presume that the closets were misused and damaged by children of the lower orders; and this consideration seems hardly to have had weight enough with the Inspector. On the other hand, the evidence brought forward as to the frequently objectionable condition of trough closets, and the amount of water required to keep them in a tolerable state, is rather serious, and throws very considerable doubt on the advisability of continuing that system.

THE Borough-road Polytechnic, the opening of which by Lord Rosebery was fixed for this week, has been established in the school-house of the British and Foreign Schools Society, founded by John Lancaster, the Quaker, in 1808, and which was built in 1840-3. The site belongs to the Bridge House Estates, and the schools were demised to the trustees for a term of twenty-six years from Midsummer, 1875, at a rent of 120*l.* per annum. In November, 1888, the Estates' Committee of the Corporation agreed, we gather, to grant, upon the surrender of the existing lease, a new lease to the Charity Commissioners, or the Institute's governing body, for a term of eighty years, at 120*l.* for the first thirteen, and 300*l.* for the remaining years, subject to a reversion to the Corporation if the premises should cease to be used as a Polytechnic. They have, moreover, offered to sell the freehold for 10,500*l.* The Charity Commissioners undertook, conditionally, to give a yearly grant of 2,500*l.* out of the Parochial Charities' common fund, and have lately increased their donation by an additional grant of 4,000*l.*,—as we read in

the *Times* of August 1 last. Mr. Rowland Plumbe superintended the alterations made in the premises to adapt them to their new purpose.

THE report * of Dr. Theodore Thomson to the Local Government Board on an outbreak of enteric fever in the urban sanitary districts of Rotherham, Rawmarsh, and Greasborough, in the West-Riding of Yorkshire, is a long and unusually interesting one, embodying the results of a very careful and painstaking investigation. The report goes to show that there was no special reason to connect the illness with defects of drainage (although this was not all that it might be), but that the nature of the ground from which the water supply is drawn was at fault. It was noted by Dr. Thomson that Rotherham and Rawmarsh, though not directly connected with each other, both showed an outbreak of enteric fever at nearly the same time, leading to the supposition that there must be some common cause for this simultaneous outbreak, and it was also noted that the two places had the same water supply. Further, it was noted that this water supply was from two gathering grounds, distinguished as "high level" and "low level," the latter the most recently taken up and the best in the conditions of its gathering ground; and statistical returns showed that the number of cases was much higher (the proportion being 4·5 to 1) in the portions of the districts furnished with the high-level water than in that supplied with the low-level water. This is the broad statement of the case, into which however the report goes much more fully and in more detail than we can indicate here, and with several tables showing the various relations between the health and the circumstances of water supply in the two places principally concerned. As to the nature of the defects in the water supply, the description of the gathering ground for the higher water supply may be partly quoted :—

"The Ulley gathering grounds comprise an area of about 2,200 acres, and, like the Dalton, are formed by two convergent valleys. Only a small proportion of the land constituting these gathering grounds is uncultivated. It mostly consists, in tolerably equal parts, of pasture and arable land, much of which, down to the very margin of the streams threading their way to the reservoir, was at the time of my visit covered with manure. This manure consisted, in at least one instance that I observed, of nightsoil and ashes. Several villages are situated within the gathering ground. Two of these, however, viz., Morthen and Brampton, do not appear to directly pollute the water supply, inasmuch as Morthen is drained into cesspools, and, except for one house, Brampton drains out of the Ulley watershed. Other villages, however, viz., Ulley, Aughton, Aston, and Aston Netherthorpe, are obvious and serious causes of pollution to the water taken from these gathering grounds. The drainage of the village of Ulley, with the exception of what is lost in the ground surrounding the village, passes directly into a stream which flows down to the reservoir. This drainage consists of liquid refuse from house-yards, farm-yards, and sinks. In Aughton and Aston house drainage has, by means of intercepting sewers, been conveyed out of the watershed, but yard drainage is still allowed to flow down fields constituting part of the gathering ground. This yard drainage consists not merely of rain-water and yard washings, it is contaminated by farm-yard refuse and by part of the house-slops, which are frequently thrown down the yard gratings."

The report concludes with the remark that the facts, as ascertained, "deserve the serious consideration of the Town Council in connexion with the question of the water-supply of the districts reported on." We hope the hint will not be lost sight of by that body.

AS there are conferences on most subjects nowadays, there is no reason why people should not meet and discuss coffee taverns, which have been the subject of a conference this week at Lancaster. The more these useful institutions are made known the better, but we strongly object to coffee taverns being regarded and discussed from the philanthropic point of view. They should be considered solely as sound and wholesome business concerns, required for the use and well-being of the inhabitants of town or village. To workmen they are a great boon, and, properly managed, there is no doubt that, where any considerable body of artisans are collected, they can always be made to pay. The odd thing is that when people are always on the lookout to start new concerns, enterprising men do not establish coffee taverns wherever an opportunity offers. There are numerous localities where coffee taverns could be profitably established. Further, there can be no doubt that they should always be open for certain portions of a Sunday. Many working men who use them require them as much, if not more, on this day as on any, and the convenience and well-being of those who use them require that they should not be closed on Sundays. As a counterpoise to the public-house, the coffee tavern can never be thoroughly effective till it is open on Sundays. The man who is driven to the public-house on a Sunday will often not return to the coffee tavern on Monday.

THE Liverpool Architectural Society is establishing classes for assisting the professional education of architectural students during the coming winter months. The classes will be free to students joining the Society, and are intended to be a preparation for the R.I.B.A. examinations; and an examination will be held at the close of the session, and prizes awarded by the Council. The subjects to be studied are Sanitation; Stresses in Structures and Shoring; Building Construction; Specifications and Quantities; History of Architecture; and Mouldings, Features, and Ornament. It appears therefore that this important provincial Society has practically adopted the views of the Institute in regard to architectural education; and probably others will see the desirability of following its example.*

MANY of our readers will be interested to know that Miss Emily Penrose, a daughter of the author of "The Principles of Athenian Architecture," has been also engaged in the serious study of Greek archæology, and is intending to deliver a course of lectures on Greek vases in the British Museum, on October 18 and 25, and November 1. She is also desirous to form a class for the study of vase paintings. Miss Penrose's name will ensure a favourable hearing at the outset for a lecturer who may be expected to inherit a faculty for accurate perception and logical deduction in matters relating to Greek art.

THE visit of the Architectural Association to St. Albans Abbey to-day (Saturday), under the guidance of Mr. Neale, who has such an exceptional acquaintance with those portions of the ancient building which are still left, ought to be a very interesting and instructive excursion. Mr. Neale proposes to limit his remarks "to works executed before the dissolution and still existing." A chronological list of these portions of the Abbey has been printed for the use of those joining the excursion. But why did not the Association invite Lord Grimthorpe to follow with a lecture on the beauties and peculiarities of the new work at the Abbey? They might thus have added amusement to instruction.

SALE OF LAND, TANKERTON-ON-SEA.—Mr. T. G. Wheatley held a land sale last week at this new watering-place, near Whitstable. About fifty plots were offered, and found ready buyers at prices ranging from 23*l.* to 55*l.* per plot. Another sale will be held on October 12 next.

LETTER FROM PARIS.

THE 22nd of September was not only the annual national fête, but the centenary of the proclamation of the Republic, and the Paris authorities determined to solemnise the occasion in a special manner, by reviving the ancient custom of historic processional cars in honour of the epoch of the first Revolution. One is obliged to admit that the result was not very happy, and suggests the proverbial reflection, "Autres temps, autres mœurs." The design of the cars had been entrusted, it is true, to some of the first theatrical decorators of the day, —MM. Rubé, Chapron, Carpezat and others whose reputation is European and whose talent is quite above mediocrity. But, whatever might be said of the richness of the decorations and costumes, and the ingenuity of some of the details, somehow in broad daylight the things looked uninteresting and out of season. It needs the artificial glare of the footlights to bring such things into proper keeping, and the cars did not in themselves realise all that might be wished from that kind of design. For the "Marseillaise" car, for instance, instead of a mediocre fac-simile of the splendid figure of Rude, it would have been far better to have commissioned an original composition from a modern master. It would have required the *verve* of Dalou or Falguière to give the crowd anything like a new and powerful sensation.

In spite of this, however, the general success of the fête did honour to the resources and management of M. Bouvard, the new "Inspecteur-Général d'Architecture" to the Municipality, who has proved himself a worthy successor to Alphand in this kind of organisation. Thanks to his management, everything passed off admirably in the midst of a compact and enthusiastic crowd. In order that the north and south quarters of Paris might share equally in the spectacle, he had organised two processions identical in design, with the same figuration, the same costumes, and the same cars. These last, five for each procession, have been diversely appreciated. To our thinking, that of the eighteenth century was the best and the most decorative, a piquant work of MM. Amable and Gardy, inspired by the "plateformes roulantes" formerly employed in the fêtes given for the marriages of the Dauphins of France. Naturally the crowd preferred the Marseillaise car by M. Lemeunier, which we thought too heavy and massive. The car of the "Chant du Départ," of gigantic proportion, formed a triumphal arch surmounted by a figure of fine design. It was the work of M. Jambon. The car of the "Apothéose de la République," by M. Carpezat, presented the appearance of an antique trireme surmounted by a colossal statue of the République, badly coloured; it would have been better to give it the appearance of marble or of bronze. Lastly, the car "De la Concorde et de la Paix," by MM. Rubé and Chapron, was of a sober and severe architecture set off with ornaments in very classic taste. The other accessories of the procession hardly call for remark.

The fête day opened by an official ceremony in the Panthéon. There too there was much to criticise. In England the great churches of Westminster and St. Paul's have been made use of as the receptacles of monuments to great men, without destroying the essentially religious use and character of the buildings. At Paris, the transformation of the Eglise Ste. Géneviève into a secular Temple of Fame gave one a discordant sensation. One does not find in that building despoiled of its altar, but with a decoration which at every step recalls the recollections of its religious origin, that sentiment of holiness which ought to prevail where the memory of the dead is celebrated; there is no harmony between the decorative treatment and the actual use of the monument. The organisers of the ceremony seem rather to have felt this, and the paintings were made to disappear in part behind hangings of Gobelins tapestry. But, by a singular coincidence, one could see, above the official platform where the speakers were celebrating the first Revolution, in the apotheosis subject painted long ago by Gros, the figure of Louis XVI., the most august victim of the Revolution.

We may remark, while speaking of the Panthéon, on the bad effect of the pendentives of the cupola painted by Carvallo from the designs of Gerard, and which appear terribly heavy and dark in their setting of white stone. This defect appeared the more apparent from the fact that the writer had been studying not

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* Published by Eyre & Spottiswoode.

* The following are the names of the gentlemen appointed to lecture on the various subjects:—"Stresses in Structures," and "Shoring," Mr. J. Dod; "History of Architecture," Mr. H. W. Keef; "Building Construction," Mr. David Lyon; "Specifications and Quantities," Mr. H. L. Beckwith, F.S.I.; "Mouldings, Features, and Ornament," Mr. C. E. Deacon, F.R.I.B.A.; "Sanitation," Mr. T. Harnett Harrisson, F.R.I.B.A.

long before the effect of the mosaics in the pendentives of St. Paul's, the gold backgrounds of which harmonise much better with the masonry, and do not give, as at the Panthéon, the sensation of a cupola cut short and in danger of falling.

Paris has received recently the visit of the members of the "Library Association," the nineteenth congress of which was opened in the Hemicycle des Beaux-Arts. The visitors were received everywhere with great cordiality, and they accepted an invitation from the Duc d'Aumale to visit Chantilly, the library of which is so celebrated, and where the owner personally received the party. Since the gift of the château to the Institute, or rather the announcement that it will belong to the nation through that body, everything there has been much changed. The Prince affects to be no more "chez lui" there; that is to say, he has reduced his apartments, suppressed the "Salle de Spectacle," and made many other modifications in view of the new destination of the building. The artistic collections bear already the title "Musée Condé," and the monogram M.C, ornamented with the Royal fleur-de-lys, is to be seen everywhere. There is certainly a fine example in this spectacle of the "grand seigneur" transforming the palace of his ancestors into a museum, which he is continuing to enrich by frequent new acquisitions for the instruction of the democracy of the future.

For some years the Radical majority of the Municipal Council has been endeavouring to obtain the demolition of the "Chapelle expiatoire," the existence of which it professes to regard as an insult to the Republic. So far, however, the Government has refused to give it this satisfaction. It is now announced that the question is about to enter on a new phase. After the example of the Copts, who occupy the chapel of the Luxembourg; the Roumanians, who have the ancient chapel of St. Jean de Beauvais; and the Greeks, who worship in St. Julien le Pauvre; the Armenians, who are tolerably numerous in Paris, solicit the favour of celebrating their religious ceremonies in the monument which Louis XVIII. caused to be erected by Fontaine on the site of the burial-place of Louis XVI. and Marie Antoinette. By granting this request, the Government will put an end to the constant demands of the Radicals for the destruction of the building.

A piece of artistic news of some interest may be mentioned. M. Jas. Tissot—well known in London, where he lived a good many years and whose society types he reproduced in many pictures—has, it is said, occupied a lengthy visit to Palestine with the tracing out the scenes connected with the life of Christ, and has already completed more than 200 pictures of a set which is to be still further extended. Those who have seen these works, so different from everything previously associated with the name of the painter, speak highly both of the learning and feeling displayed in them.

The Service des Beaux-Arts of Paris is about to take measures for securing, as matter of urgency, the immediate repair of various edifices of real artistic and archæological interest which, nevertheless, are not at present classed among those "Monuments Historiques" which are kept in repair at the national expense.

THE CHEYNEY COURT, WINCHESTER.

This old building has just been converted into a dwelling-house, and the two lower windows take the place of small Jacobean ones; the insertion of the large doorway and the blocking up of the cramped entrance beside it being the only other alterations visible on this side. Messrs. John Colson & Son, architects, superintended the alterations, which were chiefly confined to the interior, and cost about 1,000*l*. It was here in former days that the Bishops administered justice. The prisoners' cell, now a wine-cellar, is at the back, where the outer wall, being part of the old city wall, is nearly 6 ft. thick. The timber work, all hidden by plaster till four years ago, dates from the fifteenth century, and is constructed of ship timbers.

Church Schools, Langley, Worcestershire.—We are informed that the foundation-stone of new Church Schools, Langley, Worcestershire, was laid on Monday. These schools, when completed, will accommodate 400 children. The architect is Mr. F. B. Osborn, of Birmingham, and Mr. J. Light, of Langley, is the builder.

THE LONDON COUNTY COUNCIL.

The first meeting of the London County Council after the vacation was held on Tuesday, at Spring-gardens, Mr. John Hutton, Chairman, presiding.

Resignation of Lord Hobhouse.—A letter was read by the Chairman from Lord Hobhouse resigning his position as Alderman, owing to failing health.

Mr. Charles Harrison, Vice-Chairman, said they all knew of Lord Hobhouse's great work in connexion with the municipal reforms which preceded the introduction of the Local Government Act. They were indebted to him for the wide knowledge he brought to bear not only on questions connected with London government, but on matters relating to the incidence of taxation, and particularly to the taxation of ground-rents. He moved a resolution recording the Council's sense of the valuable services rendered by Lord Hobhouse, and expressing regret at being deprived of the benefit of his experience.

Mr. Antrobus seconded the motion, which was agreed to unanimously, and Tuesday, October 11, was fixed as the day for electing an Alderman to fill the vacancy.

Tenders.—Several lists of tenders were received, which we give on another page.

Proposed New Bridge at Vauxhall.—The first part of the Bridges Committee's report referred to Vauxhall Bridge, and was as follows:—

"We desire to draw attention to the condition of this structure. The bridge was opened in 1816, and was built at a cost of 259,681*l*., and purchased by the Metropolitan Board of Works for 75,000*l*. It is composed of stone and cast-iron, and crosses the river by nine arches, each of 78 ft. span, supported by eight piers, each 13 ft. wide above low water level, the piers thus occupying about 104 ft. of the waterway, or about one-eighth of the total width of the river between the abutments. The length of the bridge between the abutments is 809 ft., and its width between the parapets 36 ft. 3 in., having a carriage-way 24 ft. and two footways each 6 ft. 1½ in. wide. The superstructure of each arch consists of ten cast-iron ribs 18 in. deep, spaced about 4 ft. apart, and they support the vertical cast-iron spandrel standards upon which rest the ribbed cast-iron plates which retain the macadam roadway filling. The heights of the soffits of the arches at the centre of the bridge

vary from 26·5 ft. to 17·0 ft. above Trinity high-water at the centre of the arches adjoining the abutments. The prevailing gradient over the bridge is about 1 in 35. The gradient on the Middlesex approach is 1 in 29, and that on the Surrey approach 1 in 30. Provided that the Council considers it desirable to reconstruct the bridge, and that the Thames Conservators consent to the lowering of the soffit of the central arch to the extent allowed for new Putney and Battersea Bridges, viz., 20 ft. above Trinity high-water level, a considerable improvement might be effected in facilitating the passage of heavy traffic over the new bridge by the reduction of the service gradients to about 1 in 62, and by the adoption of wood paving instead of macadam. We desire to direct the attention of the Council to the condition of the foundations of three of the central piers of the bridge. The result of an examination of the foundations of these piers made by a diver in November, 1887, showed that the bottoms of the timber cradles upon which the piers are founded were in several places 4 in. or 5 in. above the level of the clay bed of the river adjoining them, and in the case of the third pier from the Middlesex side of the bridge the clay was found to have been scoured away from beneath the cradle 5 in. or 6in. inwards from its outer edge. This action was at the time of the examination arrested by means of bags filled with cement laid along the outer edges of the cradle, and by the further deposition of 500 tons of slag around the piers; but a recent inspection has shown that the action of the tide is removing the protective works. The cutwaters of the piers are in a dilapidated condition. On comparing sections of the river bed in this locality taken in 1853 with those taken in 1878, it becomes evident that the bed of the river has been, and is, gradually deepening. This action is the result of the great scour caused by the high velocity of the current through the central arches of the bridge, which velocity is considerably augmented by the obstruction caused by the thick piers to the passage of the upland and tidal waters. The ebb tide at times runs through some of the arches with a surface velocity of 7½ miles an hour, and is dangerous for navigation. Barges are occasionally carried on to the piers by the tide, and both are injured. In several instances lives have been lost. Moreover, the strength of the tide frequently hinders the progress of steam vessels passing under the bridge, and we may mention that we have witnessed this difficulty. With respect to the strength of the cast-iron arches, a concentrated live load of about 10 tons upon the centre of one rib of the arch is as much as is admissible, as this load produces a tensional strain on the bottom flange of about two tons per square inch. A concentrated live load of 16 tons at the centre of a rib produces a tensional strain along the bottom flange of the rib of nearly three and a half tons per square inch at the centre of the span, which is quite inadmissible as a working strain for cast-iron. The cast-iron plates which uphold the macadam may carry with safety a load of 4 or 5 tons per wheel, but the last-named weight should not be exceeded as a working load. The traffic over this bridge has of late years much increased. The enlargement and alterations at Vauxhall Station, and the weak condition of Lambeth Bridge, have greatly helped to swell the traffic. From returns which have been taken it appears that 22,332 vehicles crossed the bridge in the week ended June 17, 1879, and 34,915 during the week ended July 11, 1891; thus showing an increase of 13,583, or giving a daily average of 5,130 as against 3,190 in 1879. We have on several occasions received influential deputations urging the Council to proceed without delay to give the localities affected the desired relief, by rebuilding Vauxhall Bridge, in order to meet the growing requirements of the traffic, both by road and river. We are of opinion that this request is one that should be acceded to, and that the bridge to be constructed should meet not only the pressing needs of the present time, but those of future generations. The bridge which we suggest should take the place of the existing structure is a five-arch steel bridge with granite-faced piers and abutments, the width between the parapets being 80 ft. The cost of construction would be about 380,000*l*. To accommodate the traffic during the rebuilding of Vauxhall Bridge, we propose that a wooden bridge, not less than 50 ft. wide, should be erected to cross from the extreme western end of the Albert Embankment to Millbank. The cost of this temporary bridge is estimated at 30,000*l*. We recommend—

(*a*) That, subject to an estimate being submitted to the Council by the Finance Committee as required by the statute, Vauxhall Bridge be rebuilt and such temporary works as may be involved thereby.
(*b*) That the Parliamentary Committee in conference with the Bridges Committee be instructed to prepare a Bill to be introduced in the next session of Parliament, authorising the rebuilding of the bridge.
(*c*) That the Bridges Committee be empowered to prepare the necessary plans and estimates to be laid before Parliament."

The Hon. R. Grosvenor, in submitting the report, dwelt upon the great need that existed for the new bridge, and said that supposing the Council passed the recommendation that day, and the matter passed the House of Commons this year, the bridge could not be opened to the public until somewhere near the end of 1896. Some members had asked why the committee had not recommended the construction of a granite bridge. The reason was because of the enormous difference in the initial cost. Their engineer estimated that the proposed steel bridge would cost 380,000*l*., whereas a granite construction would cost 625,000*l*.

Recommendation *a* was agreed to without discussion.

On recommendation *b*,'

Mr. Costello moved to add to the paragraph a direction to provide in the Bill that such proportion of the cost as may be equitable shall be raised by way of an improvement rate on the owners of ground values in the County of London, instead of the whole cost being thrown on the occupying ratepayer.

The Rev. Fleming Williams seconded the motion.

Mr. Beachcroft asked whether, in the event of this principle of taxation being rejected by Parliament, the improvement would not be taken.

Mr. Costello replied that in such an event the Council would have an opportunity of making known its wish.

Mr. Harben opposed the motion, and said he could not see how ground landlords could benefit by the mere widening of an already existing bridge.

Sir J. Lubbock said he regarded the proposal as nothing more than the re-affirmation of a principle laid down over and over again by the Council.

Mr. Grosvenor said he willingly accepted Mr. Costello's amendment, which was then agreed to.

On the motion of Mr. Tayler, it was resolved: "That it be referred to the Bridges Committee and Improvements Committee to arrange, if possible, that the bridge be constructed so that the Surrey side abutment shall give convenience of approach for any future extension of the Albert Embankment."

Recommendation *b*, as amended, was then agreed to.

Recommendation *c* was also passed.

Suspension of a District Surveyor.—The Chairman read a special report of the Building Act Committee, who drew attention to the case of Mr. H. Parsons, District Surveyor for South Lambeth, who was recently fined for travelling on the South-Western Railway Company's line without having paid his fare. The committee considered the matter of such gravity that they recommended that Mr. Parsons should be suspended pending the consideration of his conduct by the Committee.

The recommendation was at once agreed to.

Proposed Central Mortuary.—The consideration was resumed of the report of the Public Health and Housing Committee in reference to the proposed establishment of a central mortuary. In the report the Committee expressed the opinion that it was necessary to provide a mortuary in London for the preservation of unidentified bodies, and that it was practicable to do so in connexion with a local mortuary and coroner's court, and they recommended "That a joint Committee of the Public Health and Housing Committee and of the Public Control Committee be constituted for the purpose of formulating a scheme on the lines of this report."

Dr. Collins moved: "That the question of the provision of a central mortuary for unidentified bodies be deferred until the adequate provision of local mortuaries by the local authorities shall indicate how far such central mortuary is required, or otherwise."

This amendment was seconded by Captain James, and, after some discussion, carried.

Infectious Disease (Notification) Act, 1889.—It was resolved, on the recommendation of the same Committee, "that it is desirable in the interests of the community, that the Infectious Disease (Notification) Act, 1889, should be made compulsory throughout the United Kingdom."

Condition of the Thames.—The Main Drainage Committee brought up a report stating that between July 23 and September 17 the amount of sewage sludge taken from the outfall works at Barking out to sea exceeded 354,000 tons.

Lieut-Colonel Ford asked whether there was any truth in a statement that had been made to the effect that in foggy weather the men in charge of the sludge ships dropped their load when half way down the river.

Mr. Howell Williams, the Chairman of the Committee, said he had made inquiries, and found that there was no foundation for the allegation.

The Chairman called special attention to the following paragraph in the report of the committee:—

"We have received a report from the chemist stating that during the past summer the river Thames has been in a most satisfactory condition; that at no time has it been possible to detect the slightest discolouration of the water by sewage matter or black mud, and that the foreshores at all points have been clean. He further states that the aëration of the water has shown a marked increase, the quantity of oxygen dissolved in the water being on one occasion, August 31, the maximum quantity possible. The chemist adds that this satisfactory result, unassisted by any special atmospheric conditions, such as heavy spring rainfall, can be attributed to no other cause than the operations at the Council's sewage precipitation works."

The Proposed Cromwell-road Bridge.—The Improvements Committee's report contained the following paragraph and recommendation:—

"It will be within the recollection of the Council that in the last session of Parliament powers were sought for the construction of a bridge and approaches to connect West Cromwell-road, Kensington, with Talgarth-road, Fulham, but that the clauses relating to the bridge were withdrawn from the Council's Bill owing to the decision of the Select Committee of the House to omit from the preamble of the Bill the words relating to the 'improvement rate.' Since May last, when the clauses were withdrawn, the urgent necessity for the bridge has become more and more apparent; in fact, we feel that the work is one of such immediate necessity that it cannot be postponed without grave inconvenience. In these circumstances we have decided to recommend the Council to renew its application to Parliament for powers to construct the bridge and approaches. We believe that the Council is so well acquainted with all the details (given fully in our report presented on June 2, 1891, and in subsequent reports of the Parliamentary Committee) that it is unnecessary for us to weary the Council by repeating them now, and we therefore propose to confine ourselves to our recommendation—

'That the application to Parliament for powers to construct Cromwell-road-bridge and approaches be renewed in the next session.'"

After some discussion this was agreed to.

Further Additions to Cane Hill Asylum.—The Asylums Committee reported that they had received three tenders for the additions to Cane Hill Asylum. Upon examination they found that none of the tenderers had complied with the conditions as to filling up the schedules of rates of pay. They thereupon adjourned the consideration for a week to give the tenderers an opportunity to fulfil the requirements. This having been done, they further considered the tenders, which appeared as follow:—

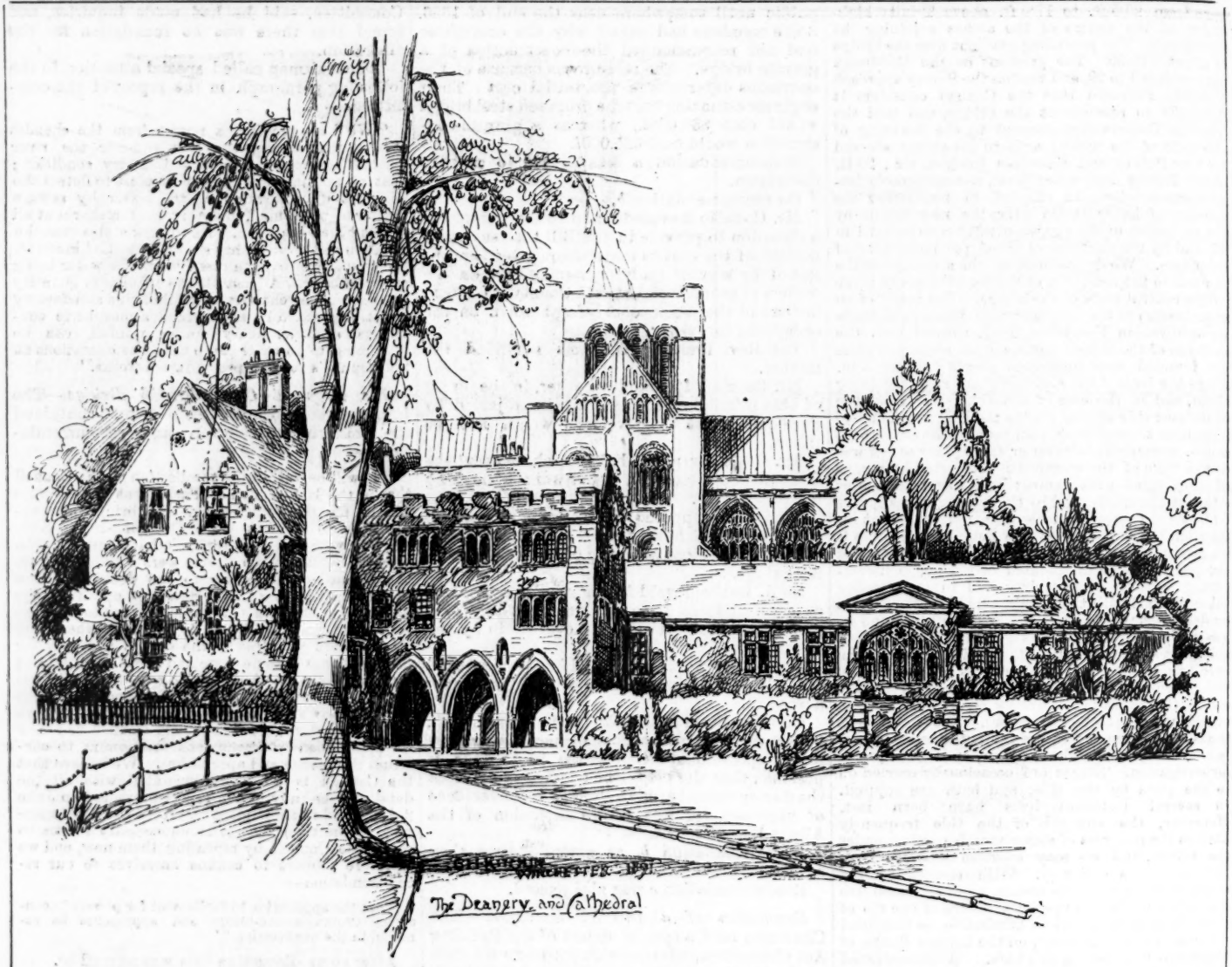
Joseph Potter, Horsham	£15,290
Morgan, Isted, & Morgan, Southampton	15,936
Reed, Blight, & Co., London	16,348

The usual inquiries as to the lowest tenderer, Mr. Potter, being satisfactory, they accepted his tender, and instructed the solicitor to complete the contract.

After transacting other business the Council adjourned soon after seven o'clock.

Association of Municipal Engineers and Surveyors.—This Association held its annual congress this year at Belfast on Friday and Saturday, September 23 and 24. As we find it impossible in the present number to find space for more than a brief report, we have thought it would be of more interest to our readers to defer the report till next week, when we shall be able to give a considerable portion of two of the principal papers that were read.

The British Production of Steel in 1892.—The statistics just issued by the British Iron Trade Association show that the output of Bessemer steel ingots in Great Britain during the first half of this year was only 649,816 tons, against 923,005 tons in the corresponding half of 1891; compared with the latter, it is a decrease of 273,189 tons, or 29·6 per cent. The production of Bessemer steel rails shows an even more serious falling-off, from 422,623 tons in 1891 to 211,884 tons in 1892, a decline of 210,739 tons, or 50 per cent. The chief cause of this decline was, no doubt, the stoppage of the fuel supply through the Durham miners' strike, for Cumberland produced 81,804 tons less, Cleveland 67,947 tons less, and Lancashire 33,959 tons less. The output of open-hearth steel in the six months was 722,341 tons, against 778,888 tons in the corresponding six months of 1891; decrease, 56,547 tons, or 7·28 per cent.



Winchester Cathedral and the Deanery. From a Sketch by Mr. G. H. Kitchin.

Illustrations.

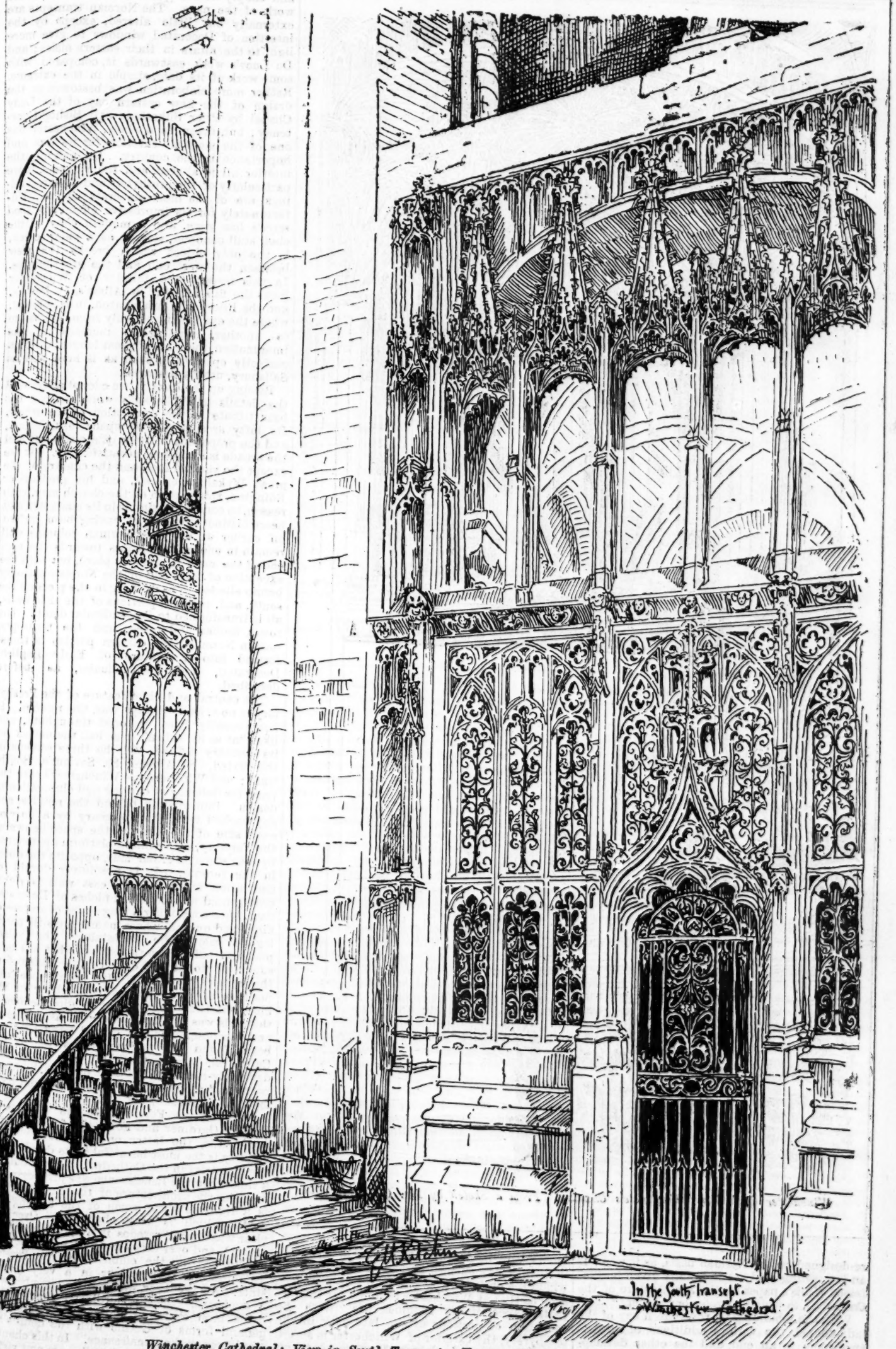
WINCHESTER CATHEDRAL.*

BOTH Winchester and St. Alban's lay claim to be the longest Cathedral in England. Taking, however, the plan of St. Alban's published in the *Builder* in the present series, and the careful measurements taken by Mr. James Neale, and comparing them with the measurements taken expressly for the plan of Winchester which we give to-day, the result is to give the greater length to Winchester. St. Alban's Cathedral, from the interior of the west wall to the inside face of the east wall of the lady-chapel, is 521 ft. 1¾ in., —that of Winchester 526 ft. 6 in. The projection of the porches westward is also greater at Winchester than at St. Alban's, but the best idea and fairest result to be obtained is by comparison of their internal lengths. This great length at Winchester is, as in the case of St. Alban's, one of its chief external features. The long line of roof cannot be considered picturesque in either case, and it is eastward of the tower that the exterior of Winchester assumes more the importance of architectural grouping, and the striking mixture of styles which renders our Mediæval buildings so interesting, and which promises so much for variety on reaching the interior. The interior of the presbytery at Winchester is undoubtedly one of the finest architectural sights in England, and in many ways is similar to the arrangement at St. Alban's. These two great churches should, indeed, be taken and studied together, and the various ways in which the Norman church was developed and altered, compared. The Norman nave at Winchester was of even greater length than the existing one. Its western front, apparently flanked by towers, was forty feet westward of the present porches. The eastern arm was, of course, shorter, and in this case apsidal, as at Peterborough. The form of the early eastern arm is still marked by the crypt, and in one instance in the church above, by the remains of a circular column in Bishop Gardiner's Chantry (see plan). The tower, like many other Norman structures, fell, and was rebuilt, and the fear of further catastrophe induced the builders to add considerably to the size of the tower piers, giving them the priority in bulk of the tower piers of England. In the transepts the theorist will find ample scope for discussion as to the former arrangement and use of the returned aisle (the same arrangement that excavations discovered to have once existed at Ely), and its treatment above the arcade level. Various suggestions have been made, but so far no very satisfactory result has been attained. The central tower and its piers, the transepts, crypt, fragments of the presbytery, and the ruins of the chapter house on the south, with the slype between, are thus all we have at present visible of the church founded by Walkelyn in 1079, and dedicated July 15, 1093. To this, in succeeding styles, builders have altered and added, the elongation of the presbytery, as in so many other cases, being the chief work of development.

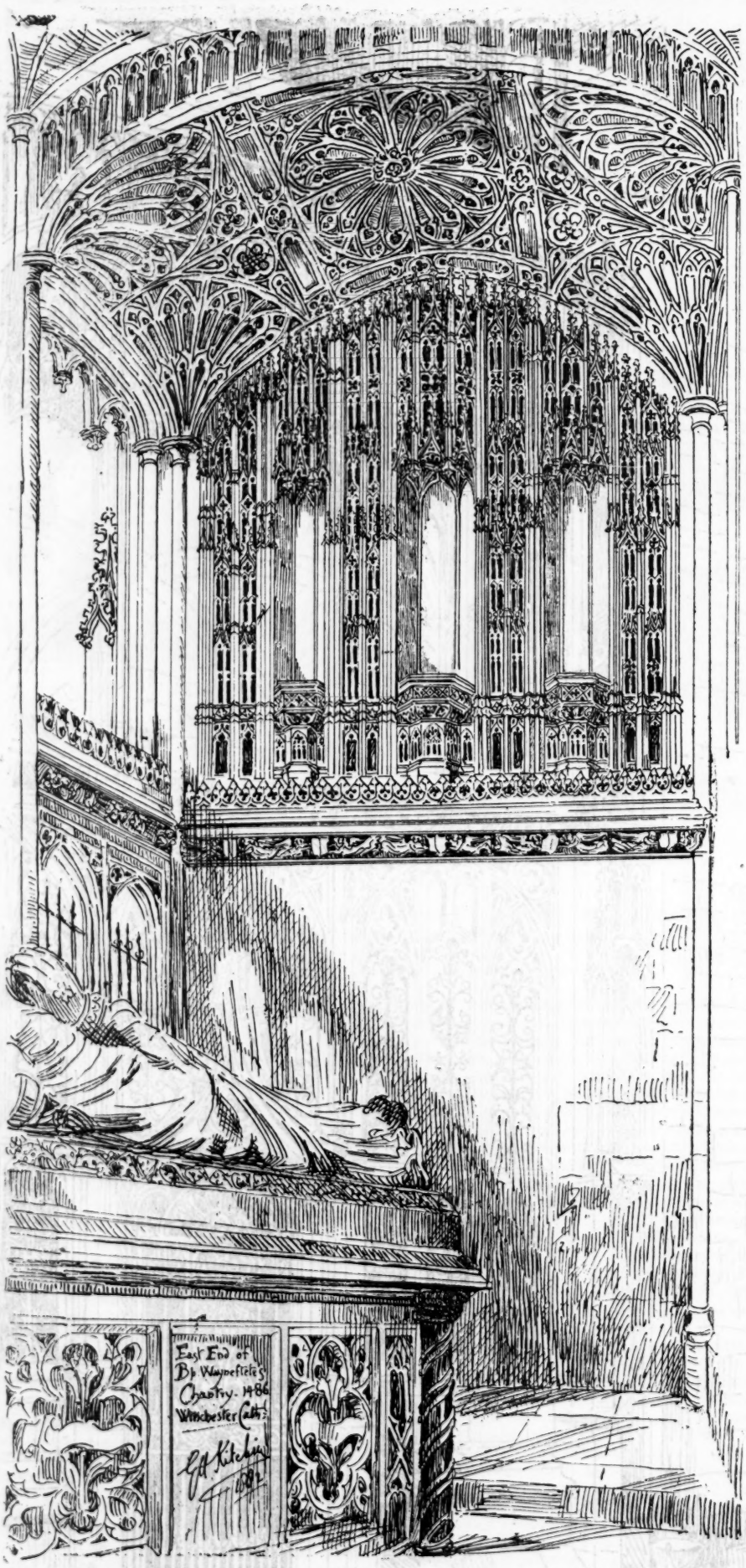
De Lucy (Bishop, 1189-1204) commenced rebuilding the presbytery, his work being eastward of the Norman building (leaving the latter thus undisturbed as long as was practicable), and in Decorated times the presbytery itself was rebuilt, the Norman work (except the crypt) being removed, and the new work planned, not to follow the spacing of the Norman bays, but yet so designed that it kept in its form a certain record of the earlier church. Hence the bending inwards of the bay between the great altar screen and the east window. De Lucy's work rendered some such scheme desirable, as his central alley was made narrower than that of the presbytery. What he would have done had his work extended to the remodelling of the Norman work we can only conjecture, but probably some arrangement, such as at Salisbury, with a triple or double arch behind the altar, was in his mind. We can scarcely, however, regret, that the arrangement as it exists was carried out. The result is far more picturesque and less stiff than the rectangular lines would have been, and gives a character to the east end of the church, both externally and internally, which it would have otherwise lacked. The next and the last works on any great scale were the rebuilding of the west end of the nave by Bishop Edington (1345-66), and the entire transformation of the nave by the great William of Wykeham (1367-1404). The first of these works entailed the removal of the Norman front, and, as we see by the plan, the western arm was shortened. Instead of two flanking towers, as at St. Alban's, or one great central one as at Ely (as the Norman foundations seem to suggest), the front now assumed a type more in character perhaps with a great parish church than a cathedral. The church at Edington, in Wiltshire, is, to our thinking, a finer and more successful conception, the west window and the treatment below it at Winchester being somewhat out of scale with the rest of the building. Bishop Edington also began remodelling the nave; and the two west bays of the north aisle, and the west bay on the south are in a great measure his work.

The second great work, that of Wykeham, was far larger in scale and grander in conception. He appears, according to the late Professor Willis (whose carefully-dated block plan we have taken as a guide for the various dates on the large ground plan here given), to have kept, in the eight columns on the south side of the nave, the original masonry of the Norman piers, their contour being altered to suit the style—Perpendicular—of the day. On account of labour entailed or expense, the scheme was apparently abandoned, and the older nave piers were refaced, the Norman core only being retained. The clever way in which the nave was

* This series of illustrations of the Cathedrals of England and Wales was begun in our issue of January 3, 1891. A list of those already illustrated, with particulars of future arrangements, will be found on page 272.



Winchester Cathedral; View in South Transept. From a Sketch by Mr. G. H. Kitchin.



Winchester Cathedral: Waynflete's Chantry. From a Sketch by Mr. G. H. Kitchin.

re-designed on the Norman basis, as it were, is an interesting study, and is fully given in Professor Willis's paper on the Architecture of the Cathedral, to which we refer our readers.*

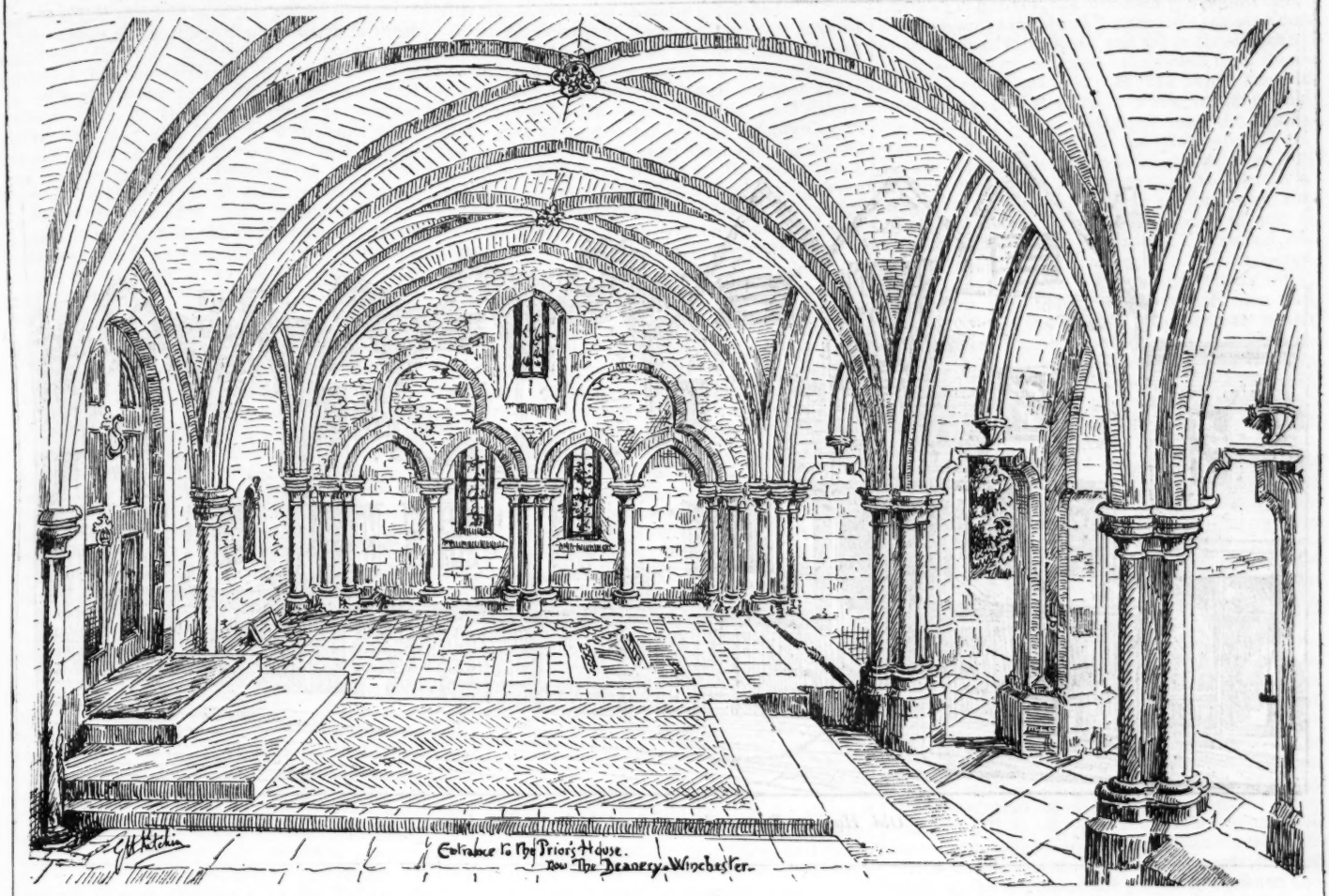
With the rebuilding of the eastern bay of the lady-chapel, the various additions of importance come to an end, and the other developments were in detail rather than in structure in fittings and shrines, and all the accessories which the church of a powerful establishment such as that at Winchester required for the due performance of its religious life. With the exception of portions of the late work in the presbytery, the exterior of Winchester is severe in treatment, and plain wall-space plays an important part in the design. Plain parapets and simply-treated pinnacles characterise the work of the nave. The Norman transepts are externally but little altered, except by the insertion of Decorated windows to give more light to the altars in their eastern aisles; and De Lucy's work eastwards is, compared with some work of its date, simple in the extreme. Rather more elaboration was bestowed on the design of the new eastern bay of the Lady Chapel by Prior Silkestede and Bishop Courtenay; but, taken as a whole, Winchester has one of the simplest exteriors for its size and importance in the country. On gaining the interior all is altered, and the richness, more particularly of the presbytery and its surroundings, are of the most elaborate nature. Unfortunately for its impressive effect, the rood screen has gone, and a modern copy of the choir stall canopies, serving as a choir screen, is the only object which breaks the view between the west end and the great reredos. In this respect the interior of Winchester lacks the fine effect of St. Alban's, St. David's, and the Priory of Christchurch, in Hampshire, where the eye is led gradually from one feature to another, tending to increase in the imagination the idea of great length, which a perfectly open vista, such as is here and at Salisbury, utterly destroys.

Passing up the nave, if we cannot admire all the details of Wykeham's work, we can but bear tribute to the conception of the whole. Its lofty arcades give no space for triforium, and the proportion between the clearstory and the arcade is somewhat unsatisfactory. If we except the vaulted roof, and the chantry of the great Wykeham himself, and his predecessor Edington, this portion of the church may, with reason, be considered simple in its character, and bears distinct evidence of having been grafted on earlier work. The Norman columns still remain in one or two places towards the east end of the nave arcade (see plan), but with the exception of these and of the Norman masonry before alluded to as existing in the piers on the south, and, perhaps, portions of the aisle walls, all is transformed to Perpendicular detail. The tower arches and piers, and the transepts, remain Norman; the eastern portion is transformed into a mixture of Early English, Decorated, and Perpendicular, as before described.

The central and chief feature of the Presbytery is now, as it always was, the reredos. It has recently been restored throughout, and like that at St. Alban's, has had the niches for its statuary refilled. Of the three screens of the period,—St. Albans; St. Saviour's, Southwark; and Winchester,—Winchester bears the palm for delicacy of carving and elaboration in design. Immediately behind the reredos, and approached from the sanctuary by a door on each side of the altar, is the space known as the Feretory, with a raised platform approached by four steps on either side, opposite the doors in the reredos. It is absolutely devoid of decoration inside, but its east wall is richly ornamented with canopied niches of Decorated date, once containing a long series of statues of kings and queens, whose names are still partly legible below the pedestals. The raised platform before mentioned has what has been suggested to be the earlier high altar before the reredos was built. Its appearance and position certainly suggest something of the kind, but there seems to be no direct evidence that this was so. It is now used as a museum and receptacle for the carved work that has been found at various times about the Cathedral, amongst which are some very delicately-moulded heads and cresting, besides a portion of a painted chest with armorial bearings and figure subjects.

Flanking the Feretory are the Shrines of Bishops Gardiner and Fox,—the former on the north side, the latter on the south. Fox's chantry is the most beautiful in its detail of all the chantries in the Cathedral. It was built at a time when the Renaissance was just beginning to affect the architecture of the day, and there is a freedom about some of the carving and detail which is very charming. Over the altar was a small reredos in a sunk panel (now empty), and over this a band of angels holding shields bearing the emblems of the Passion. These retain their colour in a very perfect state. At the back was a little chamber with a cupboard. Bishop Gardiner's chantry is a much later structure, curiously retaining the general forms of Gothic with the details and mouldings of the Renaissance. In this chantry, below the general level of its floor, is now visible

* The Journal of the Archæological Institute; Winchester Meeting, 1845.



Entrance to the Deanery, Winchester. From a Sketch by Mr. G. H. Kitchin.

the base of one of the columns which supported the Norman apse (see *ante*), interesting as being the only remains of the eastern arm which we have above the crypt level.

Passing eastward of this Feretory, we come to De Lucy's work, simply arcaded below, and lighted by pairs of lancets above, with the rear arches carried on groups of detached shafts. On either side of the central alley are the chantries of William of Waynflete and Cardinal Beaufort,—north and south respectively,—perpendicular structures with elaborate canopies and vaulting, but neither of them remarkable for refinement of detail. Taken together, however, with Fox's and Gardiner's chantries and the smaller monuments, they make an imposing group, backed by the darker lines of the woodwork in Langton's and the Lady Chapel. Between the shrines is a good effigy of a cross-legged knight with shield, bearing arms, in fine preservation. There are also one or two earlier memorials of bishops, William of Basynge, and another unknown. The floor here is laid with old tiles, mostly foliage patterns. The Lady Chapel itself is partly Early English and partly (the eastern of the two bays) perpendicular. It retains still traces of a series of frescoes on the walls of the later portion dealing with scenes from the Life of the Virgin, more remarkable for their curious,—and sometimes bad,—drawing, than for any artistic value. At the entrance from De Lucy's aisles is the screen, and the stalls in the chapel remain and are very good. Bishop Langton's chapel lies on the south side of the Lady Chapel and is a continuation of De Lucy's aisle, the walls indeed are his, and the early vaulting shafts remain, but the vaulting and the fittings and screen are all late in date; very beautiful in detail, especially in the execution of the heraldry which appears on the entrance door, and the back of the stallwork.

The chapel on the north side of the Lady Chapel,—known as the Guardian Angel's chapel,—contains nothing of much interest beyond the paintings on the early vaulting (which here remains) and one side of a Decorated tomb built into the east wall.

Space does not permit of a detailed description of all the points of interest in the building, but attention may be drawn to the following:—the ironwork on Wykeham's chantry; the Norman font in the nave, with its curious carvings; a later Renaissance monument on the north side of the sanctuary; the fine Decorated stallwork with misereres, and some later fronts with excellently designed panels; the coped tomb in the choir, said to be that of William Rufus, and the gallery known as the "Minstrel's Gallery" over the western bay of the north aisle of the nave. There is, besides this, a mine of decorative work in the various shrines and Fox's screens enclosing the presbytery, and on the curious little painted chests over them, said to contain the bones of the Saxon kings; and fine remains of glass in very perfect condition in the clearstory windows of the sanctuary.

The whole of the choir and presbytery obtains much additional dignity from being considerably raised above the nave. There are eight steps from the nave to the choir screen, and eleven more to the altar, giving a total of nineteen in all. The transepts are on a level with the nave, long flights of steps leading from them to the aisles of the presbytery. It is almost needless to add that this raising of the eastern portion of the church was due to the existence of the Norman crypt, and is similar to the examples at Canterbury and Rochester.

Of the buildings surrounding the Cathedral the cloisters have been destroyed, and only a fragment of the west front of the Chapter-house (Norman) and the foundations of its walls remain. The slype between this and the church exists, with a later building over it, approached by steps from the south transept. The present Deanery was a portion of the Prior's house, and there are sundry fragments about the Close, but nothing of any great importance. The interest at Winchester centres round the Cathedral itself, its shrines, and the histories of the men who each added their quantum of skill towards the beautifying of the fabric, and who, in some cases, erected their chantry chapel during their life-time in order that their bodies might have a fitting resting-place in the building which they had helped to make, and which still remains, one of the most interesting and valuable in the country.

ALTAR CROSS AND CANDLESTICKS FOR THE PARISH CHURCH OF CARSHALTON.

These are to be executed in brass. The upper part of the cross, above the octagon base, to be in hammered work; the base itself to be cast. The design and drawing are by Mr. Reginald Blomfield.

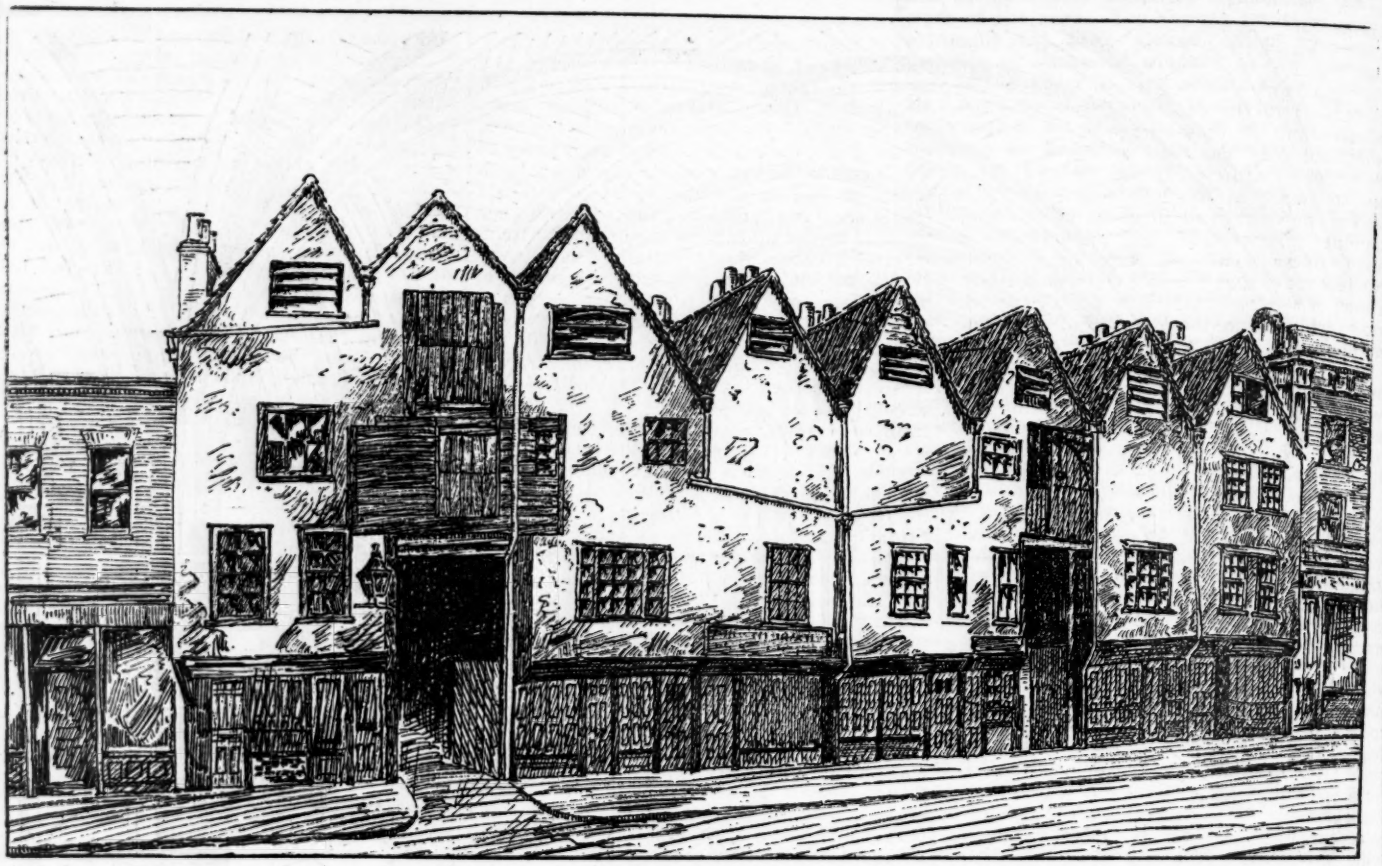
The church, with the exception of the old chancel, tower, and south aisle, is now being rebuilt on a very much larger scale from the designs of Sir Arthur Blomfield and Mr. Reginald Blomfield conjointly.

The drawing from which the illustration is taken was exhibited at the Royal Academy this year.

REREDOS IN SOUTH TRANSEPT, ST. ALBAN'S CHURCH, TEDDINGTON.

This work was executed entirely in Ancaster stone by Mr. L. A. Turner, of London. The central niches were, by request, adapted from Henry VII.'s chapel. Mr. A. H. Skipworth is the architect. The drawing from which it is taken was exhibited at the Royal Academy this year.

New Polytechnic Institute, Borough-road.—The new Polytechnic Institute, situated in the Borough-road, Southwark, has just been completed. The buildings forming the new institute were formerly used by the British and Foreign Schools Society as a residential training college. To adapt them to their present purposes a considerable amount of structural alteration was necessitated. The whole of the site—which is about seven-eighths of an acre in extent—has not been covered, space being reserved for the building, as funds become available, of a swimming bath and gymnasium, a hall for lectures, concerts, &c., and three workshops. On the ground floor of the new institute are a library, a social-room and refreshment-room for men, and a commodious reading-room. On the same floor, but at the opposite side of the building to that in which are situated the apartments to be used by men, are refreshment and recreation-rooms for women, who obtain access to their portion of the institute by a separate entrance. A gymnasium divides the two sets of apartments. On the other floors of the building are a lecture-room capable of accommodating some 350 people, class-rooms, lavatories, baths, and cloak-rooms. The alterations have been carried out from the designs of Mr. Rowland Plumbe.



Old Houses, Bermondsey: about to be pulled down.

OLD HOUSES, BERMONDSEY.

We give an illustration of the sixteenth-century houses in Bermondsey-street which are condemned and will shortly be pulled down. Very little is known of their history; they stand upon what was formerly the site of King John's barracks, for, as is well known, that king at one time had a residence in Bermondsey. Under one of them, it is reported, is an entrance to a subterranean way, of which there are known to have been several in this district connected with the old Abbey of Bermondsey; more may yet be heard of this, and possibly other objects of interest may be brought to light when the houses are demolished. The floors of the shops are several steps below the pavement, and the entrances in some cases are very low.

Upon what is now covered by Bermondsey-square, the Long-walk, and Grange-walk, formerly stood the Abbey of Bermondsey (St. Saviour; Benedictine, 1082). The part occupied by Bermondsey-square is the site of the Abbey close, while at the entrance from Abbey-street stood the great gate-house. A little further to the north-west is the site of the west gate, and at the entrance to Grange-walk from the square stand the remains of another gate-house, in the walls of which still remain the pivots of the gate hinges. To the north of the Abbey stood the Conventual Church, the site of which is now covered by the houses in Abbey-street, opposite the disused graveyard of old Bermondsey Church.

The illustration is from a sketch made for us by Mr. J. A. Pywell.

Restoration of Hipswell Church, Yorkshire.—The Church of St. John the Evangelist, Hipswell, which during the past year has been restored, was reopened on the 14th ult. by the Bishop of Richmond. Altogether, when the porch is completed, the restoration will cost 1,200*l*. Mr. Charles Hodgson Fowler, F.S.A., of Durham, was the architect, and Mr. H. Hurwood, of Mansfield, near Darlington, the contractor. Mr. Johnstone Stephenson, of Richmond, was intrusted with the painting and decorating. The restoration work was commenced last autumn. The old relics of the early part of the fourteenth century which have been discovered in the excavations have been worked into the building. The new southern window adds to the light. The pews and woodwork of the interior of the church are new, and are dadoed with the wood of the old pews. The roof supports are of stained oak, and the seats are of red deal.

Correspondence.

To the Editor of The Builder.

"THE INSTITUTE AND ARCHITECTURE."

Sir,—In my opinion, whatever raises the art of architecture will help to raise the profession. I use the term "art of architecture" as I should use the "art of plumbing," only architecture differs from this, both in degree and in kind.

It may save time if I give my definition of architecture, and I define it as *building properly;* and this propriety does not consist merely in adjusting the materials to their adequate use in point of strength and appropriateness, nor their arrangement in a building for roughly answering its end, but their being made to do that so completely that the use of the building is disclosed by its outward appearance. Certain classes of buildings ought to produce such noble ideas and strong emotions as are in harmony with the uses of the structures.

Buildings may be divided into three classes,—commonplace, monumental, and mixed. The commonplace buildings comprise those that are solely devoted to the necessities, such as warehouses, eating-houses, drinking-shops, offices for ordinary needs, barns, stables, cattle-sheds, &c. Monumental buildings are those whose main object, beyond shelter and convenience, is to raise emotions, or to embody lofty or terrible thoughts; churches, public monuments, the tombs and cenotaphs of great men, Parliament houses, prisons, and the like, and those devoted to the Deity should raise the highest.

The mixed are palaces, mansions, houses, &c., as they contain portions for the mere necessities, and portions for the display of the nobler instincts and faculties of man.

The architect is a humble rival of Nature, for he at least creates the shells for groups of human beings, and endeavours to make his building as perfect and characteristic as her organisms. Architecture is consequently the master art of vision, the other visual fine arts raise emotions alone, which the highest architecture does too, but at the same time the works of architecture, like those of Nature, answer other ends. Some of Nature's works, merely as objects of vision, scarcely raise an emotion; some raise emotions of delight and of sublimity; some those of repulsion and horror. But whatever emotion is raised, the organism perfectly answers its purpose. The emotions raised by architecture are as vague as those raised by music, but may be heightened and made more definite by painting and sculpture. As, however, the works of painting and sculpture are not architecture, and are only super-added, they may be left out of the consideration.

The architect can settle the shape of his building, and of the chambers of which it is made up, but he ought to do so in accordance with their needs, both physical and æsthetic. He can, under limitations, use what length, breadth, and height he chooses, but he is strictly bound to the laws of statics in putting his materials together and into shape. He can mould, shape, or pierce the parts, and he can draw attention to those portions that have the heaviest duties to do, by accentuating them; and in the highest class of buildings he can admit or exclude light as he pleases. To qualify himself for an architect, he first has to learn the qualities and strength of materials, and the laws of statics, and to arrange the sub-divisions of his building properly and conveniently; but if he wants to raise the right emotions he has to consider how existing shapes affect him, to learn those laws that make arrangements of voids and solids agreeable, and to investigate the methods hitherto adopted of dividing and of accentuating parts, and the effect on himself of light, twilight, and darkness in buildings. You can, by examination, ascertain if the student has acquired this indispensable knowledge, and roughly learnt these laws, and can apply them, up to any point you like. It is hardly to be imagined that anyone acquainted with architecture can maintain that this knowledge is not indispensable. The Institute has started an examination with a view of ascertaining if this knowledge be possessed, and has refused admittance to students who do not possess it, and from experience it has found that it has stimulated their industry and raised the standard of excellence. Though the present examination is far from being all that could be desired, and does leave the emotional, commonly called the æsthetic part, rather in the background. This examination deals, and has dealt, entirely with theory, and admits only to the Associateship, which was the lower grade. There is a large body of architects outside the Institute who have built, and who, if desirous of joining it, must now be admitted as Fellows under the provisions of the old Charter, which merely enacts that they shall be over twenty-nine years of age, and have practised for seven

years; and this holds good until the Royal Institute of British Architects insists on an examination, which it now has power to do.

The abstract consideration of what is most beneficial for the profession is purely intellectual, but the putting it into practice may not only excite the passions of Associates and Fellows, and of those proposing to become either, but may also tend to overthrow their pre-conceived notions. It may be well, therefore, to glance at the intellectual part first. Each of the three great divisions of the art,—planning, construction, and æsthetics,—are capable of transcendental perfection. A great architect must have a certain transcendentalism in each of the three, which is the reason why great architects are the rarest of all great professional men.

I am inclined towards a more complete theoretical equipment as the qualification of Fellows, only then the qualification of age must be abandoned; men in practice cannot devote the requisite time to theoretical study, and all that age necessarily gives is experience.

If the restriction to twenty-nine years of age had been applied to military affairs, it would have excluded Alexander the Great during the greater part of his Persian campaign, and Napoleon during his conquest of Italy. Gallantry and skill in the field are, and always have been, looked on as entitling a man to promotion, whether he be theoretically educated or not. Our field is building, and I do not see why creditable buildings should not entitle a man to the Associateship, as well as theoretical knowledge; as he must have mastered a good deal of this to design and carry out his buildings. Low theoretical knowledge or creditable building would then qualify a man for the Associateship. There would be a body of young and accomplished theorists added to the present practising Fellows; and Associates, whether admitted for theoretical or practical knowledge, could be raised to the Fellowship, when their buildings were excellent enough; and, of course, there would be discretion left to admit eminent architects to the Fellowship at one step.

There must be some amendment of the Charter, and it appears to me that it might as well be made as comprehensive as possible.

GEORGE AITCHISON.

SIR,—The letters which you have recently published by Mr. Brydon and by Mr. Belcher, and your observations thereon of the 10th ult., are most valuable in drawing attention to some of the very weighty questions which have now to be thoroughly threshed out by the Council and by the members of the Institute when they take into consideration the subject of the qualification of Fellows.

That the Fellowship of the Institute should be conferred as a distinction and honour, not only for artistic merit in the candidate's work, but also for the constructive skill and practical knowledge shown in it, is what I feel certain was intended to be expressed by both these writers. In pleading for the special recognition of Architecture as a fine art, they are far from wishing to ignore the all-essential *other* side of the question, and,—as I read their letters,—they strongly deprecate the cutting up into separate items all that is involved in true Architecture.

What we cannot but feel is that a tendency has developed itself in the Institute to neglect as an essential qualification for a Fellowship the artistic side of the profession of architecture. And for this reason some of us are in agreement with the "memorialists" in resenting this, although we on our part are unable to accept what seems, in fact, to be their view, that the profession of Architecture, with all the practical knowledge it ought to involve, is of necessity antagonistic to art.

Is this a view which Cockerell, Street, Digby-Wyatt, Scott, Burges, or Donaldson would have accepted? Were not they as artists and professional men representatives of the different phases of the architecture of the nineteenth century, of whom the world of art may well be proud? And they were Fellows of the Institute and worked hard in its behalf.

When such names are recalled to mind, one cannot but be struck with the tone of some of the Presidential addresses and annual reports of the Council congratulating members on the yearly increase of our numbers,—implying "quantity" rather than "quality." This is the interpretation which those standing aloof from us may fairly enough put upon the congratulatory words, and we cannot blame them if they do so, and if their lack of sympathy with the Institute is thereby increased.

With all deference, one may, perhaps, suggest that to hear of, or to read of, the names of men known and honoured for their good work in architecture,—in the truest and highest sense of the word,—on their election as Fellows, would give one a greater idea of the dignity of the Institute than to learn that such-and-such a number had been added to its roll,—not a few of them, we cannot but know, having been elected by qualifications other than architecture. Numbers, doubtless, improve a balance-sheet! but, if financial considerations are of importance, our very considerable expenses under the head of literature might be reduced with advantage to the members. We do not pretend to be a "publishing," nor, in a literary sense, a "learned society." This latter term ought, however, to apply to us if a cultivated taste and skill in constructive architecture were to be the mark of a Fellow of the Institute.

Such qualifications are independent of style or fashion, as the names of those late Fellows referred to prove. Although a prevailing fashion may for a time have undue weight in elections, yet, if a man possesses these qualifications, sooner or later their influence will tell, and bear down all opposition. If, however, he does not possess them, surely he ought not to be elected a Fellow of the Institute of British Architects?

R. HERBERT CARPENTER.

P.S.—Since writing the above, I have read with great interest the further letters you publish and the notes thereon. I most heartily endorse all that Mr. Ernest George writes, feeling that it is, as a general rule, only by study,—which examinations encourage,—that men will in their after life be in a position to act and think for themselves, instead of blindly and often ignorantly following in the wake of those leaders whose position has been acquired by hard work, by reading, travelling, and drawing, without which "genius" is sure to "run wild," and waste itself in eccentricities.

SIR,—Mr. Jackson has forgotten his Vitruvius. This author, who must be accepted as a better authority for the use of the name "architect" than our new-fangled school, distinctly specifies as part of the duties of an architect the decision of questions of "light and air," no less important in Imperial Rome than in London. What a farce this modern "preciousness" is! The Institute has sometimes been accused of being a trades-union; the few restrictions they impose are as nothing to the iron bonds proposed by the "memorialists." One may evidently assume, without offence, that the little knot of young architects so indiscreetly belauded by Messrs. Brydon and Jackson are for the most part ignorant of questions of practice that have certainly hitherto been considered as pertaining to the duties of an architect, and that they are endeavouring to cloak that ignorance by casting discredit on the performance of such duties. Surely a sounder position would be that which many of us are content to adopt, namely, to admit that, owing to the altered conditions of modern life, it is impossible or difficult for one man to combine all the branches of the profession.

I, for one, refuse to accept this fanciful limitation of an ancient title, and uphold that the only test of an architect is his capacity to practise architecture in its widest sense. I maintain my own right to do anything to earn an honest living, subject to the slight restrictions I submit myself to as a member of the Institute, and I decline altogether the trades union tyranny that the memorialists seek to impose on us.

I decline to admit any forfeiture of my rank as an artist, even if I should sell a property, write a book, or fill a diocesan surveyorship, as I believe Mr. Jackson formerly did.

RALPH NEVILL, F.S.A.

THE PALACE OF XERXES.

SIR,—I have only just returned to England, and seen in the issue of September 3 your review of the translation of Messrs. Perrot and Chipiez' work on the "History of Art in Persia." On p. 180 you refer to the argument which the authors of that work have put forward against Fergusson's restoration of the plan of the palace of Xerxes, viz., that drains are shown on Flandin and Coste's plan under the line of walls suggested by Fergusson,—"a strange oversight on the part of the architect thus to undermine his own work," and you conclude by saying, "if this plan [viz., Flandin and Coste's] is correct, the criticism is a sound one." I have always regarded Fergusson's restorations of the plan of this palace and other structures at Persepolis as much more reasonable than those of the French authors; at the same time it would have constituted a weak point in his contention if, as a matter of fact, the drains were correctly shown on the plan referred to. Before Mr. Weld Blundell started on his travels last year to Persepolis to obtain a collection of casts of Persian sculpture for the British Museum (where that phase of art is almost entirely unrepresented), I directed his special attention to this point, and prepared for him a plan from Flandin and Coste's work, indicating the line of drains which they had shown. From the careful examination which Mr. Blundell made it would seem that Messrs. Flandin and Coste had assumed that the line of the drains ran between and connected together the various vertical shafts provided to carry off the rain-water. This assumption turns out to be incorrect, for although in two or three cases two of the vertical shafts are connected together where there were doorways between, as a rule, these vertical shafts are connected by horizontal pipes leading to the main drain, *which lies equi-distant between Fergusson's proposed wall and the first row of internal columns*. These vertical shafts, about 15 in. to 20 in. in horizontal section, were cut in large blocks of stone accurately fitted together, and were probably carried up in the thickness of the wall to take the rain-water from the roof. Messrs. Flandin & Coste would seem to have assumed that they were intended to take the surface water from the platform, but I am informed by Mr. Blundell that in some cases where they have been preserved they rise already some 12 in. to 15 in. above it, showing that they must have been embedded in some wall, and it is singular that this should not have been noticed by Messrs. Flandin & Coste. Mr. Blundell was able to trace the existence of walls at the angles of the platform between the great porticoes, and the theory which has been put forward against the existence of walls in other positions, because no traces of their foundations can be found on the present *consolidated surfaces*, Mr. Blundell upsets by pointing out that this consolidation has been effected by time since the destruction of the buildings, and that when they are cut through there is ample evidence of substructures of various kinds.

R. PHENÉ SPIERS.

*** We may observe that we pointed out specially, in the article referred to, that the argument from the supposed line of drains was only a second-hand one as far as MM. Perrot and Chipiez are concerned, and we are not surprised to find further investigation throwing doubt upon it.

VESTRIES AND HOUSE DRAINAGE.

SIR,—Your correspondent Mr. Frend appears to be under a misapprehension as to the powers of the Metropolitan Vestries, which he greatly overestimates.

The Metropolitan Vestries and Boards of Works have no power to make any by-laws or regulations respecting house drainage, this power being vested by the Metropolitan Local Management Act, 1855, sec. 202, and Public Health Act, 1891, sec. 39 (1), entirely in the London County Council, and, as a matter of fact, neither the Metropolitan Board of Works nor the London County Council have ever made any such by-laws. The only by-laws the Vestries are empowered to make are for regulating the business of their meetings and the appointment and remuneration of their officers (Metropolitan Local Management Act, 1855, sec. 202), and for water supply and the removal of certain nuisances (Public Health Act, 1891, secs. 16 and 39), and these by-laws, if they involve a penalty, have to be approved by the Home Secretary; the Local Government Board have only to deal with the local by-laws of the provincial boards.

I am well aware that some of the Vestries do issue what purports to be by-laws or regulations, but these as such are totally illegal, and can only be enforced by "bounce"; and as many of the "regulations" are obsolete, and even in the highest degree objectionable, this cannot be too well known. The law never contemplated allowing the Vestries to force upon builders and architects (most of whom are better versed in such matters than the Vestries) any particular system or want of system of drainage; but it gives the Vestries power to see that the provision of the Acts are carried out, that every house shall be provided with proper drainage and water supply; it certainly never contemplated that set regulations should be followed to the exclusion of all possibility of improvement.

Before commencing any drainage works, any person must, by the 1855 Act, sec. 86, give to the Vestry seven days' notice in writing of his intention, and the Vestry must then, within seven days (unless the time be extended to not more than fifteen days by the Surveyor, under the 1862 Act, sec. 63) make their order of requirements to be served on the person giving notice. This the Vestries usually do by serving a general printed notice, with the so-called "By-laws" or "Regulations" printed on the back. This, I contend, is not good service of the order or notice, as by the Public Health Act, 1891, it is enacted, sec. 127, (1) Notices, orders, and other such documents under this Act shall be in writing; and notices and documents, other than orders, when issued by the County Council or a Sanitary Authority, shall be sufficiently authenticated if signed by their clerk or by the officer by whom the same are given or served. (2) Orders shall be under the seal of the Council or Authority, duly authenticated.

This clearly shows that it is intended that all orders on the requirements of drainage shall be made on the merits of the individual case, and not on a general printed form of regulations, but must be in writing and under seal.

Again, the Vestries are not the final authority, as by the 1855 Act, sec. 211, appeal is allowed to the London County Council, and this is confirmed by the 1891 Act, sec. 126; and I venture to think that the County Council would over-rule the absurd orders of some Vestries, such a "regulation" (?), for instance, as the prohibition of the use of iron pipes by the Camberwell Vestry.

I consider the only way to obtain proper sanitation would be for the County Council to take the matter in hand, and, with the assistance of the eminent sanitary men of the day, frame a set of by-laws that shall, while ensuring sound efficient drainage, give perfect freedom to the architect as to the system to be adopted, and give ample room for the adoption of all possible improvements.

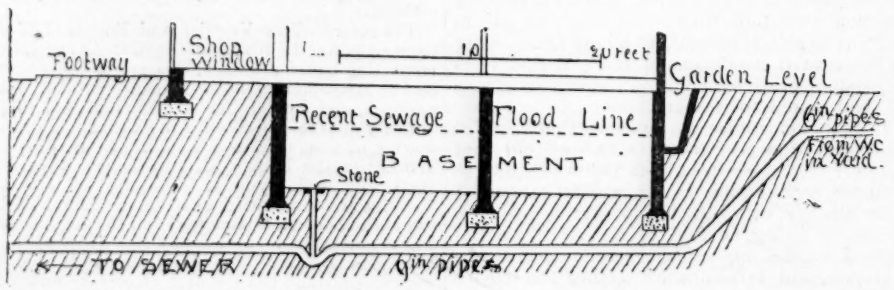
It is, I think, an anomaly that while all building operations are under the jurisdiction of the District Surveyor, the drainage of houses is under the Vestry and their Surveyor; so that vestrymen who may, and generally do, know nothing of sanitation have the power to dictate to an architect, and put him to much trouble and annoyance before he is allowed to do his work properly.

In conclusion, I wish to draw attention to the fact that the Public Health Act, 1891, enacts in sec. 39 (1) that "the County Council shall make by-laws with respect to water-closets, &c.—not "may," but "shall." What, then, becomes of the Vestry "regulations" and "by-laws"?

BERNARD DICKSEE.

DISTRICT SURVEYOR'S DRAINAGE.

SIR,—Owing to the heavy fall of rain recently the main sewer in the district from which I write became choked, and the basement of a dwelling-house and shop flooded with sewerage to about 5 ft. above floor level; the drain under had burst. To obviate this in the future I was called in to lower the drain under the basement 3 ft., to make joints with Portland cement and sand, and to surround the pipes (ordinary glazed) with 6 in. of cement concrete, the Vestry lowering the drain on the outside to the main sewer. The owner was served with a twenty-four hours' notice to insert a syphon-trap within the main front (there is a one-story shop-front extending 8 ft. in front of the main building). I spoke of the difficulty of clearing



these syphons in case of stoppage, so was ordered to put a vertical pipe-shaft leading up to the basement floor, with a stone covering, to easily enable a rod or plunger to be inserted in case of need.

I wish to ask your opinion, or that of your readers, upon the questionable wisdom of the authorities in insisting upon placing the syphon, with its connexion, in this position.

It appears to me, so far as flooding, the shaft is exactly undoing that good that is effected by lowering the drain, as the sewerage will have less obstruction (only a 3-in. stone) than formerly, to say nothing of the possibility of sewer-gas penetrating directly into the dwelling.

The owner, at my suggestion, expostulated, and offered to place the syphon anywhere outside the building, but in vain.

I thought this might be interesting, as one very good way to introduce cholera bacillus and numerous other infections.

NOTANDA.

The Student's Column.

CONCRETE.—XIV.

SAND.

WE have, at some length, considered the various limes and cements which are used in concrete. The remaining ingredients now call for notice, and at the outset we must say that the disintegration and rottenness of concrete is often due, not to the lime or cement, but to the aggregate. An instance in point is recorded in *The Engineer* for May 30, 1890; about a thousand concrete blocks, which had been made for the Shillamill Viaduct on the Plymouth, Devonport, and S.-W. Junction Railway, were perfectly useless, and at length it was discovered that the sand which formed part of the concrete contained mundic, a mineral washed down the stream from an arsenic mine, and this had totally destroyed the setting properties of the cement. Other instances could be quoted to show the importance of the aggregate.

The addition of sand to cement-paste has two effects: it weakens the mortar and retards the hardening of the cement, both in air and in water (see fig. 2, chap. xi.). To pastes of fat and feebly-hydraulic limes, however, the addition of a certain amount of sand quickens the hardening of the mortar in air, and increases its ultimate strength, but this at the best is very little. The more hydraulic the lime or cement is, the less is the advantage of adding sand except for the sake of economy. Neat cement is stronger in every way than any mixture of cement and sand. Table ii., chap. iii., shows the diminution in tensile strength caused by mixing increasing quantities of sand with various limes and cements.

"Sand is, in general, a loose aggregation of water-worn particles, arising from the disintegration of pre-existing rocks or other mineral matter. It is generally composed of quartz-grains (quartz being one of the hardest of simple minerals, and longest resisting the processes of attrition); but it may also consist of the particles of shells, corals, &c., hence such terms as shell-sand, coral-sand, iron-sand, and the like. The minute particles thrown out by volcanoes, and produced by explosive force and attrition, are spoken of as volcanic sand."*

It is said that calcareous sand yields somewhat better mortar than siliceous sand. Some sands of igneous origin confer hydraulic energy on pastes of fat lime. Igneous rocks are classified as *Granitic*, *Trappean*, and *Volcanic*, the last being the name applied to those igneous rocks which are of recent formation. This *Volcanic* group is interesting to the architect and engineer, because it includes *puozzolana* (from Puozzoli, near Naples), *trass* (from Rhenish Germany), and other substances of similar nature, which confer a quite considerable amount of hydraulic energy on pastes of fat lime. Such substances are now never used in England, but prior to the introduction of Roman and Portland cement they were in great demand for works in water. Smeaton used puozzolana mixed with Aberthaw lime in the mortar of his Eddystone lighthouse. Both Vitruvius and Pliny describe its use among the Romans. The chief ingredients of these volcanic earths or sands are silica and alumina (the former largely preponderating), and these, as we have already shown, are the ingredients which give to most limes and cements their hydraulic energy. Into the detailed composition of puozzolana, trass, &c., and the method of using them, it is not necessary for us to enter, seeing that they have fallen quite out of use in our country, but we must say a word or two about the statement which is frequently made, especially in advertisements, that cement will bind a much larger quantity of granite sand than of any other sand.

* Dr. Page.

Doubtless this statement rests on the fact that certain igneous earths do confer hydraulic energy on lime. Gillmore states that the sand of "certain grauwackès, psammites, granites, schists, and basalts" confers a small amount of hydraulic energy, but that they are improved by calcination; they can, he adds, be used in larger proportion than other sand for mortars, when time can be allowed for the sand to develop its hydraulic properties before the mortar is immersed. It will be noticed that Gillmore does not say that *all* granites, &c., have this property, but only *certain* of them. In many parts of Japan a decomposed granite sand is found, the coarse, gritty part of which has, according to Dr. Takayama, no beneficial effect whatever on lime, but the fine, yellowish powder, resembling "china clay of good quality," and forming less than one-fourth of the total quantity of the sand, does confer hydraulic properties. "Some felspathic granites," says Dr. Page, "like those of Devon and Cornwall (Cornish stone), are easily decomposed when exposed to the weather, (or artificially ground down), and in this state produce a fine impalpable clay (silicate of alumina,—silica, 60; alumina, 40), known as *kaolin* or China clay, and largely employed in the manufacture of the finest pottery and porcelain." The yellowish powder in the Japanese sand just alluded to is evidently similar to the clay produced by the decomposition of these felspathic granites, and, bearing in mind the constituents of hydraulic limes and cements, we can quite understand that the addition of silicate of alumina in this impalpable form may confer upon limes more or less hydraulic energy. Indeed, a white cement, which has the same general characteristics as Portland cement, but with only about one-half its tensile strength, can be made by grinding together three parts of chalk and one of kaolin, burning at a red heat, and again grinding. The fine dust formed in crushing syenite has been found to have a weakening effect on mortars, just as other fine dust or mud has.

From this it will be seen that only certain kinds of igneous rocks, and these only when decomposed or ground to an impalpable powder, confer hydraulic properties upon lime, and not ordinary granite in the form of grains or larger pieces. We may assume that those granites which weather best as building-stones will confer the least benefit on limes and cements. Apart, however, from all questions of hydraulicity, granite-sand forms excellent concrete, the grains being irregular and durable.

The characteristics of good sand should be:—1, cleanliness; 2, coarseness; 3, angularity; 4, hardness; and 5, durability.

(1) *Cleanliness.*—Sand should be free from clay and organic matter, and, if the presence of these be suspected, the sand should be thoroughly washed, as they prevent, to some extent, the proper hardening of the cement. Mr. Grant, in 1862-3, found that, at all ages up to twelve months (and the experiments were not carried further), briquettes made with loamy pit-sand were considerably inferior to those made with clean pit-sand. At the age of one year the ratios of strength were as follows:—1 to 1 mortar, clean 100 to loamy 81; 1 to 2, clean 100 to loamy 87; 1 to 3, 100 to 84; 1 to 4, 100 to 77; and 1 to 5, 100 to 77. On the other hand, some experiments by Mr. E. C. Clarke, of Boston, with briquettes of cement and sand, the latter containing about 10 per cent. of loam, showed that "at one month the breaking loads were only about one-half what they would have been had clean sand been used, but at six months and one year little difference was observable." The knowledge that clean sand gives twice as good results at one month as loamy sand, is quite enough to preclude the use of the latter. Mr. Grant's experiments on briquettes one month old gave the following results:—1 to 1 mortar, 100 to 83; 1 to 2, 100 to 78; 1 to 3, 100 to 74; 1 to 4, 100 to 84; and 1 to 5, 100 to 64. Mr. Clarke also found that the presence of clay "in moderate amounts" does not weaken cement-mortars; but this is certainly contrary to the general belief.

Sand from roads, pits, and sluggish streams or ditches must be looked upon with suspicion, as it will in all probability contain fine mud, or clay, or organic matter; but sand from the beds of quickly-flowing streams may generally be accepted as clean enough, as the loam and clay will have been washed away by the stream. Sand from quarries is also good in this respect. Further, sand should not contain

any mineral substance or colouring matter which would injure the strength or appearance of the concrete, such as iron, salt, coal-dust, &c.

The salt in sea-sand does not appear to have any appreciable effect on the strength of the mortar or concrete in which it is used, but it has a tendency to attract moisture and cause efflorescence on surfaces exposed to the atmosphere. Washing the sand in fresh water may lessen this tendency a little. Many concrete houses have, however, been built with material taken direct from the sea-beach without any ill-effects, provided that the exterior is skimmed with cement, either neat or mixed with clean pit or river sand.

(2) *Coarseness.*—This characteristic has more influence on the strength of mortar and concrete than architects usually think. Many experiments have proved that fine sand makes weaker mortar than coarse. The explanation of this probably lies in the fact that the smaller the grains are in a certain quantity of sand the greater is the superficies over which the cement-film has to be spread. For instance, in a cubic inch there are, roughly speaking, about 8,000 grains of sand one-twentieth of an inch in diameter, or about 27,000 grains one-thirtieth of an inch in diameter; the total superficies of the former grains will be ($\cdot05 \times \cdot05 \times 6 \times 8{,}000 =$) 120 sq. ins., and of the latter ($\cdot03 \times \cdot03 \times 6 \times 27{,}000 =$) 176 sq. ins. In other words, the grains in one-and-a-half measures of the coarser sand will have only about the same superficies as in one measure of the finer.

The following table gives the results of two series of tests carried out by Mr. Grant in 1878-9. The cement was sifted through a sieve with 2,580 meshes to the square inch, and was made into briquettes with three parts of sand (by weight); all the briquettes were kept in water. Each figure is the average of ten tests, the result being given in lbs. per square inch:—

TABLE XVIII.

Tensile Tests of Portland Cement and Sand—(Coarse and Fine).

No.		Sand tested by sieves.	At 28 days.	60 days.	91 days.	182 days.	273 days.	364 days.
	First Series—	Nos.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1	1 cement to 3 sand	20—30	78·5	113·9	116·9	142 3	178	205·5
2	ditto.	10—20	137·1	239·5	223	231·5	254·5	251·5
	Second Series—							
3	1 cement to 3 sand	20—30	117·2	134·5	145	156	157·8	213
4	ditto.	10—20	212	236·5	206	253	267·5	273·5

The sand used in the tests numbered 1 and 3 had all passed a No. 20 sieve (400 meshes to the square inch), and had all been retained by a No. 30 sieve (900 meshes to the square inch); for the tests numbered 2 and 4, the sand had passed a No. 10 sieve (100 meshes to the square inch), and had been retained on a No. 20 sieve. The superiority of the briquettes made with the coarser sand is very evident, but it is also evident that the superiority is greatest at the earlier dates. After about two months the strength of the briquettes made with the finer sand gradually approaches that of the coarse-sand briquettes. Thus, the latter are 77 per cent. stronger than the fine-sand briquettes at the age of one month, and 91 per cent. at two months, but they are only 63 per cent. stronger at three months, 62 at six months, 55 at nine months, and 25 at twelve months. It would be interesting to know by experiment whether the more rapid increase of strength by the fine-sand briquettes is maintained until the two mortars are of equal strength. The probability is that such is not the case, but that the finer mortar is permanently weaker. But whether this be so or not, the coarser sand ought to be used, for, other things being equal, that mortar or concrete which will attain a certain strength in the shortest time is the most suitable. Architects and building-owners cannot afford to wait an indefinite period for concrete to harden; the centres of a concrete floor will probably be struck in a month or less, and if at that time concrete made with coarse sand is 77 per cent. stronger than that made with fine sand, there can be no doubt as to which ought to be used. Sand containing both coarse and fine grains is better than all fine, and, indeed, is not much inferior to coarse. When only fine sand is available, as little as possible should be used in the concrete if strength be required; but if a concrete impervious to water be needed, then sand and fine gravel enough must be used to fill completely the interstices of the aggregate. The fine sand which is blown about by the wind and formed into sandhills makes bad mortar and concrete; and the fine powder which is produced by stone-crushing machines ought to be washed from the sand and broken stone before these are used.

We have received from Mr. Henry Faija, M.Inst.C.E., the well-known authority on Portland cement, a leaflet containing a description of his method of testing cement, and a specification of Portland cement. The latter requires all the cement to pass a No. 25 sieve, and 90 per cent. of it to pass a No. 50,—pats placed in his heated apparatus for twenty-four hours must show no signs of expansion or contraction, and neat briquettes must bear at least 250 lbs. per square inch at three days, and 350 at seven days.

OBITUARY.

M. Edmond de Joly.—We regret to hear of the sudden death on Monday last, at Neuilly-sur-Seine, of one of the best-known French architects of the day, M. Edmond de Joly, architect of the Chambre des Deputés and of the Salle des Séances du Congrès National at the Palace of Versailles. M. de Joly was a former member of the Conseil-Général des Bâtiments Civils, and a former Vice-President of the Société Centrale des Architectes Français, and honorary member of the architectural societies of Lyons and Lille, an officer of the Legion of Honour, &c. He was born in Paris in 1824, and was a son of Jules Jean Baptiste de Joly who, from 1821 to 1865, was architect of a number of State buildings, and particularly of the Palais Bourbon, including the Chambre des Deputés and its dependencies, as well as the Hôtel de la Présidence (formerly the Hotel de Lassay). Edmond de Joly was at first associated in work with his father, to whom he became "inspecteur," and whom he succeeded in 1865 as architect to the Palais Bourbon, and looked after the lighting and heating and other interior arrangements of the Chambre des Deputés and the Presidence, as well as the re-arrangement and decoration of the Salle des Séances; he also, in 1871, installed the National Assembly and (later) the National Congress, in the theatre of the Palace at Versailles. Latterly he had prepared a remarkable project for the re-construction of the actual Salle des Séances and Chambre des Deputés, to which reference has before been made in our columns, and which was on the eve of being submitted to Parliament. In addition to his official and private work as an architect, M. de Joly devoted a good deal of his time to questions of professional interest, and was a member of various committees in connexion with the Société Centrale.

Mr. W. Sugden.—We regret to hear of the death, at the age of 71, of Mr. W. Sugden, the senior partner in the well-known firm of W. Sugden & Son, architects, of Leek. The news only reached us shortly before going to press. We may be able to give some information about the deceased architect in our next. Buildings by "W. Sugden & Son" have been frequently illustrated in our pages, as our readers will remember. The last we illustrated was a large house—"Woodcroft," in the *Builder* for December 12, 1891.

Mr. Josiah Dimmock.—This gentleman, who for about a quarter of a century had lived at Fradswell Hall, near Stafford, died on the 23rd ult., at his residence. Mr. Dimmock was for many years head of the firm of J. & T. Dimmock & Co., English and foreign timber merchants, Stoke-on-Trent and Stone. He was a member of the Staffordshire County Council.

International Building Exhibition in Lemberg.—An international building exhibition is now being held at Lemberg, in Galicia. It is under the patronage of the Governor of Galicia, and embraces all materials connected with the building industry. A jury will distribute the medals offered by the Austro-Hungarian Governments.

GENERAL BUILDING NEWS.

Reading University Extension College.—The Corporation of the Borough of Reading some few years ago purchased a very dilapidated property known as the Hospitium, once belonging to Reading Abbey, with the object of securing its preservation. The building originally was erected in the twelfth century, and formed a part of the Hospital of St. John the Baptist, erected 1192, by Abbot Hugh. Nothing, however, remains of that date except some portions of the foundations, upon which the present building appears to have been erected in the reign of Henry VI., in the middle of the fifteenth century, as the Hospitium for the accommodation of poor travellers. In 1485, one portion of the Hospital was converted by Henry VII. into the Royal Grammar School, but the part now remaining continued to be used for the reception of travellers up to the time of the dissolution of the Abbey; it was afterward converted into stabling, and used as such by Queen Elizabeth. In 1660, it passed from the Crown into private hands, and was converted into tenements. It has now been restored and converted into the "Reading University Extension College," at the cost of the Corporation, and has just been opened, the Dean of Christchurch, Oxford, and Sir Cunliffe Owen being amongst those taking part in the ceremony of inauguration. The restoration of the old building and its conversion for college purposes has been carried out under the directions of Mr. Slingsby Stallwood, of Reading, who is Chairman of the Survey Committee of the Corporation, and has acted as honorary architect. The work was executed without a contractor, under the management and supervision of the Borough Engineer, and the cost has been about 3000*l.*

Methodist Chapel, Newton Heath, Lancashire.—On the 17th ult. a new Methodist New Connexion Chapel was opened in Ten Acres-lane, Newton Heath. The building stands at the corner of Robert-street, on land which was formerly the site of the old school. There are two front entrances, both opening into a vestibule. The one on the right has a staircase leading to the children's gallery, which is placed over the front part of the chapel. There is also a gallery at the rear for the organ and choir. A side entrance from Robert-street communicates with a vestry for the minister, and a church parlour for use of members and congregation. The style is Gothic, and the building consists of grey bricks relieved by red bands, and quoins and terra-cotta string-courses and labels, the main features being the gable at the front with large tracery window filled in with stained glass, and the tower and spire at the corner of Robert-street, carried up to a height of 60 ft. The roof is open-timbered, with hammer-beam principals, ceiled at a height of 28 ft. from the floor. The seats are open benches, and accommodation is provided for 500 persons. The whole of the inside woodwork is executed in pitch pine and varnished. The cost, which includes lighting, heating, ventilation, boundary-walls, gates, and railing, is about 2,000*l.* The contractors for the work were Messrs. F. & E. Haynes, builders, Moss Side, and the architect was Mr. J. W. Firth, of Oldham.

Alterations to Bank Premises, Hereford.—The Hereford branch of the National Provincial Bank of England has just undergone various alterations. The heavy counter has been removed, and also the old-fashioned boxes in the centre of the large hall, the old furniture being replaced throughout with mahogany fittings. New lavatory arrangements have been carried out in the basement. The work has been executed under the direction of the architect, Mr. Charles R. Gribble, of London, and Mr. Grimes has been clerk of the works. Messrs. W. P. Lewis & Co., of Hereford, were entrusted with the contract.

Church Schools, Salford.—On the 17th ult., the new schools situated in Blackfriars-street, Salford, which have been erected to replace the old Sacred Trinity Schools, the site of which has been acquired by the Lancashire and Yorkshire Railway Company for purposes of extension, were formally opened. The building, which fronts Blackfriars-street, adjoins the club baths and racquet courts, and extends back towards the south-west as far as John-street. It is of four stories. The ground floor is kept well up above the street level in order to admit of a well-lighted basement, in which are covered playgrounds, one for the girls and infants and another for the boys, both being fitted up with gymnastic apparatus. There are also in the basement a kitchen, a boiler-room for the heating apparatus, a fuel store, and the lower stage of the hoist. The ground floor is reserved for infants, who have a large school-room, 30 ft. by 32 ft., and another room, 32 ft. by 18 ft., for the youngest of all. On the second floor, which is for the girls, there is a school-room, 54 ft. by 32 ft., with arrangements for partitioning off two class-rooms at one end by means of coiling shutters. On the boys' floor—the top room—a similar arrangement prevails. Out of school, the boys and girls have separate playgrounds. Though worked as a mixed school there are separate staircases, playgrounds, cloak-rooms, and latrines. There are open fireplaces in three class-rooms, but the heating is chiefly effected by hot-water pipes and radiators in all school-rooms and class-rooms. The contract

(for about 5,000*l.*), which includes the heating and ventilating apparatus, gas fittings, grates, and hoist, was taken by Mr. James Hamilton, builder, Altrincham, who has carried out the works under the direction of Mr. Medland Taylor, of Manchester, the architect to the trustees.

Masonic Lodge, Kilwinning, Ayrshire.—The memorial-stone of the new hall in course of erection for the brethren of the Mother Lodge, Kilwinning, was laid on the 17th ult. The site of the new lodge has a frontage to Main-street. The style adopted is that of the Scottish Renaissance. An arched doorway, forming the main entrance, occupies one side of the frontage, and in the centre is a double window, lighting the main committee-room. Over the ground floor moulded trusses carry a stone balcony and balustrade, which run along the whole frontage, and also carry a projecting five-light oriel. Above this is a steep-pitched gable with moulded crow-steps. The gable terminates with a moulded pediment. The front is of red sandstone from Montgomery Quarry, and the roofs will be covered with pale green slate, finished with red-tile ridges. From the porch a tiled vestibule leads to the inner staircase hall, from which the lodge-room is entered, and a wide square staircase gives access to the upper floor. The lodge-room will measure 42 ft. by 25 ft. On the ground floor there will be a committee-room and other accommodation. On the upper floor are waiting-rooms. The building is being erected from the design of Mr. John B. Wilson, of Glasgow, under the superintendence of Mr. John Armour, jun., Irvine, as resident architect. The following are the contractors, viz.: — Masons, Messrs. M'Lachlan & Sons; wright, Mr. Thomas Armour; plumber, Mr. Thomas Hall; slaters, Messrs. Kerr & Son; and plasterer, Mr. David Stobie—all of Irvine.

Proposed New Free Church, Morningside, near Edinburgh.—On the 15th ult., at the Edinburgh Dean of Guild Court, a warrant was granted to the trustees of Morningside Free Church to erect a new church and offices in place of the existing building. The church, which is to be parallelogram in shape, will measure 98 ft. by 50 ft. internally, with a height of about 40 ft. to the ceiling. Round three sides of the interior will run shallow galleries,—up each side they are only one seat deep, with passage behind — the lighting being acquired from windows behind the galleries. In the centre of the front elevation will be the entrance vestibule, flanked on either side by staircases leading to the galleries above, and beyond these staircases, on each side, there will be on the ground floor retiring-rooms for ladies and gentlemen, and above them Bible class rooms. At the eastern end of the church the pulpit platform area will be recessed slightly, and accommodation provided for an organ. Behind the main building will be a hall, children's class-room, vestry, session-room, and caretaker's house. The church will afford accommodation for upwards of 800 sitters, while the hall will be seated for from 200 to 250. A campanile tower will be carried up to a height of about 180 ft. The cost of the buildings is expected to be about 8,000*l.*, excluding the upper part of the campanile tower, with which, it is understood, it is not proposed to proceed at present. The architect is Mr. Hippolyte J. Blanc, Edinburgh.

Miners' Hall and Offices, Burslem.—On the 26th ult., stones were laid of the new hall and offices for the North Staffordshire Miners' Federation, in Moorland-street, Burslem. The building, which is situate in Moorland-road, adjoining the proposed park, will be a red-brick structure, and will comprise a residence for the miner' agent, offices, committee-rooms, and a large assembly-room. The assembly-room is 31 ft. by 21 ft., and is on the first floor over the offices and committee-rooms. The committee-room is 22 ft. by 15 ft. It is estimated that the building will cost about 1,500*l.* The plans have been prepared by, and the work is being carried out under the supervision of, Mr. G. L. Jones, architect, of Burslem, and the contract of Mr. W. Cooke, of Burslem, has been accepted.

The Restoration of Kirkstall Abbey.—According to the *Leeds Mercury*, the work undertaken by the Leeds Corporation with a view of preserving Kirkstall Abbey is being steadily carried out. At the outset a thorough inspection was made. It was found that many portions were in an extremely unsafe condition. The services of Mr. Micklethwaite, F.S.A., of London, were secured, and the work of strengthening the walls was commenced in May, 1891. Mr. J. T. Irvine was appointed clerk of works. Attention was first directed to the vaulting of the south aisle, which was in a very dangerous state. To erect new walls or pillars, or to replace the vaulting, was not the object which either the Corporate Property Committee or the architect had in view. While desirous of strengthening, they were strongly opposed to depriving the ruins of any of their historic interest. The instructions given to the masons were not to use a single new stone if they could possibly avoid it, but to utilise all the old material lying about the structure. The groining of the south aisle and the adjoining walls has been thoroughly restored. All the defective joints have been filled up with concrete, and in that way strengthened. The north aisle, the condition of which was not quite so bad as that of the aisle opposite, has been treated in a similar way. It was noticed that the caps of the north aisle were white, as if they were comparatively new. The explanation was that the surface of the stone was gradually shelling off. The architect advised the closing of the upper portion of the western door, through which the wind had been blowing on to the caps. This was done, and the effect has already been noticed; the caps are beginning to assume the same shade as the rest of the stonework. A large amount of rubbish has been removed from the north transept, and beautiful features of the fabric have thus been brought to light. Amongst the rubbish were found many fine pieces of masonry, some of them in a remarkably good state of preservation. One capital discovered appears quite modern, the outline being almost as sharp as it would be on leaving the hands of the carver. A considerable portion of the north aisle was demolished by the fall of a portion of the tower. To strengthen the part of the wall standing, and to increase the stability of the walls of the north transept, two pillars are now being erected. The walls of the north transept have also been tied with wood, and all the joints cemented. The repairing of the chancel is perhaps the most difficult part of the work to be accomplished. Stones have dropped from the vaulting, and some of the joints in the walls are more or less defective. The plastering of the dangerous portions is a somewhat risky operation, and will require great skill and care before it is completed. Nothing is at present being done to the tower. The adjoining walls appear to be in good condition. During the frost of last winter a part of the west wall of the cloister fell. This has now been rebuilt with the old stone. With a view of preserving the east vaults, a layer of asphalt has been placed over them. One of the supports of the ancient staircase leading from the cloister to the dormitory gave way last spring. This has been replaced and strengthened with brickwork. This is almost the only instance in which new material has been used. Nothing, as yet, has been done to the east end of the chapter-house, but it is probable that the top will be strengthened with asphalt.

Wesleyan Chapel, Taunton.—On the 22nd ult. the foundation-stones of a new Wesleyan Chapel, which is to be erected at Rowbarton, were laid. The cost will amount to 1,100*l.* Mr. Lauder, of Barnstaple, is the architect; and the contractor is Mr. F. W. Rowsell, of Taunton. The building will be in red brick and Bath stone, and will hold about 300 when finished.

SANITARY AND ENGINEERING NEWS.

Weybridge and Oatlands Sewerage. — A Local Government Board inquiry was held on September 20 and 21, at Weybridge, by Colonel Ducat, R.E., to consider an application from the Chertsey Rural Sanitary Authority for sanction to borrow 40,000*l.* for sewerage and sewage disposal. Mr. Avory, Q.C., instructed by Mr. Paine, solicitor, conducted the case for the Authority. It was explained that the proposed scheme would provide for the parish of Weybridge and the Special Drainage District of Oatlands, and as these districts are above the London Water Companies' Thames intakes, the scheme was unusually expensive through the precautions taken to prevent any possible pollution of the Thames, and in order to stop the pollution which now takes place through the absence of sewerage arrangements. Mr. W. H. Radford, C.E., as Engineer to the scheme, gave evidence that it was proposed to collect all the sewage of the two districts at one pumping station near the Thames, from which it would be pumped a distance of 3 miles to a disposal site near Byfleet. The disposal site would be 600 yards from the Wey, and 5¼ miles above the nearest water company's intake. He explained the various arrangements for securing the best effluent obtainable, and for preventing any possible damage to the London water supplies. The sewage would be treated by chemical precipitation, followed by filtration through 28 acres of land, and the sewage mud would be pressed by machinery. He was convinced the scheme would prevent a great deal of river pollution, and greatly improve the quality of the water. The sewage-disposal arrangements were of modern type, and exceptional precautions would be taken to prevent leakage from the sewers or overflow at the pumping station. No part of the works would be connected in any way with the rivers. Admiral the Hon. Francis Egerton, Chairman of the Sanitary Authority; Mr. H. Yool, J.P.; Dr. Seaton, Medical Officer of Health for the Surrey County Council; Dr. Jacob, Medical Officer of Health for the Authority; and others, gave evidence in support of the scheme, and showed the necessity for sewerage, and the advantages of the proposed arrangements and disposal site. Several of the water companies were represented by counsel, solicitors, and engineers, but they gave no evidence against the scheme, though an adjournment was asked for on the first day to enable them to take further expert advice on the scheme, but the Inspector ruled an adjournment to the second day would be sufficient for this purpose, as the usual notices had been posted. Colonel Engledue and other owners and residents from the neighbouring village of Byfleet, opposed the scheme on the ground that the sewage-disposal site was within from a quarter to three-quarters of a mile of certain houses at Byfleet, and the works might result in depreciating the value of surrounding property. Local evidence was given in support of this opposition. The Inspector will report to the Local Government Board.

Drainage Works at Plymouth.—According to the *Western Morning News*, the drainage works at present in progress in the streets of Plymouth are causing great inconvenience to traffic. For many months various parts of the town will be in a state of upheaval, whilst the new intercepting sewers are being laid at a cost of nearly 60,000*l.* The tender of Mr. G. Shellabear for carrying out the first section of the scheme has just been accepted. The undertaking is to cost over 20,000*l.* Sewers will be laid from Millbay Pier, near the outfall, to Deadlake, traversing the Dock Wharf, the G.W.R. Mileage Yard, Phœnix-street, Manor-street, and Quarry-street. From this last point there will be a tunnel to the Deadlake. In other quarters of the town similar excavations have been in progress for some time, though these works have no connexion with the large scheme referred to. In Union-street new sewers are being laid, tram-lines renewed, and wood paving substituted for the roadway surface. Mr. C. L. Duke is the contractor.

New Waterworks for Nelson, Lancashire.—On the 21st ult., water was for the first time allowed to enter the new compensation reservoir constructed at the foot of Pendle Hill, about five miles distant from Nelson. New filter-beds, constructed in the Ogden Valley, about a mile distant from the new reservoir, were also opened. The beds and the reservoir have been designed by Mr. John Newton, engineer, Manchester, and have been constructed by Messrs. Etheridge, Clark, & Co., of Manchester. The reservoir, which has a capacity for 40,000,000 gallons, was formally commenced about eighteen months ago. It impounds the Black Moss stream, and is the first of a series of reservoirs to be constructed by the Corporation of Nelson under the authority of an Act of Parliament obtained four years ago. The filter-beds are two in number, and are constructed in the Ogden Valley at 900 ft. above the sea-level. They have each a capacity of 700,000 gallons, and by a 10-in. main leading into them from the Ogden stream 600,000 gallons can be admitted to the beds daily. The same quantity of water can be withdrawn from the beds daily and taken into direct use. In addition to this source of water-supply, the Corporation are possessed of two service reservoirs with a combined accommodation for 85,000,000 gallons. The sanction of Parliament has also been obtained for the construction, when necessary, of two reservoirs, each to hold 40,000,000 gallons, on the Ogden stream, above the filter-beds, and another, to accommodate 180,000,000 gallons, at a lower level than the beds. As compensation for the appropriation of the Ogden stream, the Corporation will be required to construct, when the necessity arises, in addition to the existing compensation reservoir in Walverden (with a holding capacity of 25,000,000 gallons, and the new compensation reservoir into which water was admitted on the 21st ult.), another reservoir, to accommodate 8,000,000 gallons, near the one just constructed at Black Moss, at the foot of Pendle Hill. The cost of the reservoir just opened has been about 10,000*l.*

FOREIGN AND COLONIAL.

France.—A statue of the Republic, by the sculptor Ernest Mathé, has just been inaugurated on the Place de la Mairie de St. Ouen, near Paris. ——The French Government has just commissioned M. Carton to continue the excavations which he commenced last year at Dougga, in Tunisia, of the ruins of the Temple of Saturn. This monument was built in the reigns of Septimus Severus and Clodius Albinius, on the side of a hill which overlooks the valley of l'Oued-Khalled. It measures about 73 mètres in length and about 28 mètres in width. The cisterns under the Temple could not be cleared out for want of funds last year, but it is thought they contain interesting archæological remains.——On September 22 the statue to the painter Millet was inaugurated at Cherbourg. The architectural part of this monument is the work of M. Gutelle, the city architect.——There have also been two other inaugurations, one at Vannes, of a monument to the novelist Lésage, sculptured by M. Emerand de la Rochette, and one at Rennes, of a statue of Leperdit, who was Mayor of that town in 1793, during the Terror. ——In making some excavations in the courtyard of a school at Die (Drôme) the workmen have discovered two stone coffins, surmounted by funeral urns. These coffins contained skeletons, and also some money of the time of Domitian.—— The town of Montargris is proposing to erect a statue to Louvet de Couvray, author of the celebrated novel of "Faublas," who was sent to the Convention and sat amongst the Girondins.——It is announced that M. de Morgan has just been elected Director of Egyptian Museums in place of M. Grébault. —— There has been an inauguration lately at Béziers, on the plateau known as "Des Poètes," of a monumental fountain, by M. Antoine

Injalbert, who was born in the town. In turn sculptor, engineer, and architect, this artist has entirely superintended the works of this monument, which is about 17 mètres high, and surmounts a powerful figure of Titan carrying the world on his shoulders.——M. Chamonard, member of the École Française at Athens, has just been elected by the Académie des Inscriptions et Belles Lettres, to continue the excavations of the Temple of Hecate at Lagina.——The administration of the Department of the Aube has just opened a competition for the rebuilding of the Hôtel de la Préfecture at Troye, which was burnt last May. ——M. Puvis de Chavanne's fine picture of "Winter" has just been placed in the Hôtel de Ville in Paris. It was exhibited this spring at the Champ du Mars Salon.——The Government have just authorised the erection of the statue of Dr. Ricoret, on the Boulevard de Port-Royal, before the door of the Hôpital du Midi. This statue, which is the work of the sculptor Ernest Barrias, was exhibited this spring at the Salon des Champs Elysées.

Sweden and Norway.—According to the new building regulations of the City of Stockholm, no dwellings must be more than 13 5 mètres in height, but a special exception has been made in the case of a structure for workmen's dwellings, building for the Stockholm Home of Workmen's Company, the height being fixed at 14·42 mètres, there being four stories.——The Gothenburg Savings Bank has just taken possession of their new premises. The materials used are chiefly Swedish granite and cement. The architect is Herr Hj. Cornilsen.——The work of restoring the ancient Royal Palace of Gripsholm, near Stockholm, towards which King Oscar has given considerable sums, is progressing well. The so-called State Chamber is now in hand, where the old original painted timber roof,—of which a great deal was found in the palace,—is being remounted. The woodwork along the chamber and the frieze with portraits of Gustavus Wasa and his contemporary rulers, are to be retained. The deep window recesses are being ornamented with decorative wall-paintings, stained-glass windows inserted, the Gothic mantelpiece replaced with one in Renaissance style, and the chandeliers and furniture exchanged for others in the style of the fifteenth century. The wall between the antechamber and saloon of the Dowager-Ouen has been pulled down, thus forming a new large saloon.——The Swedish Parliament has voted a sum of 2,000*l.* and a loan of 2,500*l.* towards the restoration of the Cathedral of Skara. However, Prof. Hildebrand, the celebrated Crown Antiquarian, in a long letter to the press, states that the sum is insufficient, various architectural details having come to light whilst the work was in progress.

Denmark.—The Corporation of Copenhagen has decided upon erecting a new Town-hall in the Danish capital, and commissioned Herr M. Nyrop, architect, to carry out the work, with a committee of supervision. The cost of the building is estimated at about 152,000*l.* In addition, 2,680*l.* are to be expended on sculptural decorations, 5,500*l.* on heating apparatus, and 2,350*l.* on frontage pavements, &c. The building will be constructed entirely of native material, and there will be a lofty clock-tower.——The Government intends next year to commence the erection of a large central post and telegraph office in the city of Nalborg, in Jutland.——Some years ago M. Aug. Duvier, a Frenchman, commenced the manufacture of glass mosaic with considerable success, and now the production of glass painting for churches, &c., has been commenced with equal success. This is the only factory of its kind in Denmark. M. Duvier has attached several well-known artists to his establishment, and important orders and offers of assistance from architects are coming in, including an order for the windows of the new Catholic church in Copenhagen.

MISCELLANEOUS.

University College Lectures. — Professor Roger Smith will inaugurate the courses of lectures on Architecture to be held at University College, London, through the coming winter with a public lecture to be delivered at the College on Thursday evening, October 6, at 7.30, taking as his subject "Architecture: an Art, a Science, and a Profession." The usual evening classes on Architectural History and Construction and Modern Practice will commence the following week, and a new feature of considerable importance is the establishment of evening classes for both architectural and constructional drawing at such moderate fees as to bring them within reach of all students.

Projected Bridge across the Bosphorus.—In order to connect the railway systems of Europe and Asia a bridge across the Bosphorus would be absolutely necessary, and some time ago the Ottoman Goverament decided upon the construction of a railway across Asia Minor. Turkey, it seems, is anxious to establish a rapid connexion with India, China, and Japan, before the Transcaspian and Siberian Railways absorb all that traffic, and, in order to effect this, a permanent bridge or tunnel across the Strait must be constructed. The projects are three viz., a submarine tunnel, a tubular tunnel, or a bridge. The Sultan is said to be in favour of the latter, and at present the plans of Messrs. Giano & Gourrier are under consideration. It is proposed to construct the bridge from the Serail Point in Stamboul to Essanieh-Iskilessi in Scutari. It is to be a railway, carriage, and foot-bridge. The length, including viaducts for approach, would be 6,300 ft.

Cremation Abroad.—Cremation seems to be making great progress on the Continent. In Italy there are now crematoriums in twenty-two towns, which last year effected 286 cremations. In Milan alone sixty-five took place. This city has a travelling crematorium, which may be used miles from the town. The cost of each cremation is only 160 francs. In Germany there are four crematoriums, viz, in Heidelberg, in Offenbach-on-the-Main, in Ohlsdorp by Hamburg, and Gotha, the latter being the oldest. In Berlin and other German towns crematoriums will also shortly be constructed.

The (late) Patent Office Museum.—The contents of this Museum, originally formed by the late Bennet Woodcroft, F.R.S., have been rearranged in the ground-floor of the gallery (Science side), Kensington Museum, wherein our National Portrait Collection was deposited for a while. The exhibits are rendered more attractive to the ordinary visitor by the setting in motion of some of the models, including Newcomen's atmospheric engine (1720); Watt's beam-engine, with a replica, in section, made under his patents of 1769-84, and used by him to work a lathe, with his earlier beam-engine, fitted with the "sun and planet" gearing. The machines having closed cylinders,—except, of course, the sectional model,—are worked by compressed air. Here are the rival "Rocket" and "Sanspareil" locomotives, which Stephenson and Timothy Hackworth, of Darlington, sent to the memorable competition, in 1829, on the Liverpool and Manchester railway; close by is M. Hedley's "Puffing Billy" (1813), its four wheels coupled by five spur-wheels, which continued in use until June 6, 1862, at Wylam Collieries; Hislop's winding and pumping engine, patented in 1790, erected at Kell's Pit in 1795, and in work at Wreath Pit, Whitehaven, until the summer of 1878; and Watt's beam "sun and planet" engine erected 100 years ago at Atkinson's Chemical Works, Aldersgate-street, and which worked there until 1885, when Mr. George Atkinson gave it to the department. This last has an arrangement for opening the valves which should be compared with the mechanism of the similar, but earlier, machine erected at the Soho works in 1788. In a separate case are two interesting relics, the original model, in brass, of Trevithick's locomotive of 1802, having no chimney, and heated by a cast-iron block put into a tube in the boiler; and a copy of Murdock's locomotive, 1781-4, said to be the first of its kind, and believed to show the earliest adaptation of the slide-valve. The ill-fated *Great Eastern* is represented by a model of its 1,000-h.p. paddle-wheel engines, designed by Scott Russell, having four oscillating cylinders, 74 in. in diameter, and a 14-ft. stroke.

The Junior Engineering Society.—The presidency of the Junior Engineering Society for the ensuing twelfth session has been accepted by Dr. John Hopkinson, D.Sc., F.R.S., in succession to Sir Edward J. Reed. The new session will be opened by the delivery of Dr. Hopkinson's presidential address on Friday, November 4, at the Westminster Palace Hotel.

Visit by the Society of Engineers.—By permission of the directors of the Great Eastern Railway Company, a number of the members of the Society of Engineers paid a visit on the 27th ult. to the locomotive and carriage-works at Stratford. The party, numbering upwards of sixty, were received by Mr. Holden, the superintendent, and conducted over the extensive works, which cover an area of fifty-two acres, the shops alone occupying thirteen acres.

The Draining of the Zuyder Zee.—The great undertaking of draining the Zuyder Zee has advanced one step further, a Royal Commission of twenty-eight members having been appointed to consider the proposal. However, the plan is not a new one. It first cropped up in 1848, when the successful draining of the Haarlem Zee brought the State 18,000 hectares of fertile land, and in 1849 Herr van Diggelen, an engineer, submitted a plan to William III., according to which the Zuyder Zee was to be drained as far as the islands of Texel, Wieland, and Terschelling, whereby 550,000 hectares of land were to be gained. However, the Government rejected the project on account of its enormous cost. Similar proposals in 1866, 1870, 1875, and 1882 also stranded on the question of cost, but at present public opinion is so overwhelming in favour of the idea that it will no doubt be realised. The originators of the plans under consideration are Messrs. Vandentoorn and Lily, engineers, the latter being also Minister of Commerce. According to this scheme, the Zuyder Zee is to be drained to the extent of 360,000 hectares, but a lake, to be called the Yssel Zee, 130,000 hectares in area, is to be formed at the island of that name, for the preservation of the fishing. A powerful company has volunteered to carry out the Vandentoorn-Lily plans in twenty-two years, the cost being estimated in round figures at the enormous sum of 19,000,000*l.* But, on the other hand, it should be remembered that the draining of the Zuyder Zee would give to Holland a new province, larger than any one of her present ones. Numerous petitions are being presented to the States General, urging the taking in hand of the scheme immediately, and as one of its promoters is a cabinet minister, its realisation seems more probable, at all events, than before.

Ford's Swinging Sashes.—This is the last form of invention for a sliding sash window which can be opened so as to get at both sides of the glass from the room, and is a clever and ingenious one. The heels of the sashes on the left hand side of the frame are hinged on to moveable metal carriages sliding vertically in a slot in the window frame; on the right hand side the sashes are confined by flush bolts into a similar slot, and slide up and down with weights in the usual manner. On withdrawing the bolts, the sashes can both be opened (as casements) sufficiently to undo the right side sash-cords, which are attached so that they cannot possibly come undone when the sash is in its usual position, but can be immediately detached as soon as the sash has been swung sufficiently to get at the cords. When the latter are detached, the sashes can be swung wide open inside like casements, and the upper sash can be slid down also to the bottom of the window for cleaning. The window opening is then left entirely free, so that any large piece of furniture can be lifted through it when necessary. A concussion buffer is provided at the bottom of the weight-boxes, for the released weight to fall on. The disadvantages are a certain loss of light, as the outer sash is made smaller than the inner one in order to open clear of it on the hinges; and in large windows, as one of the weights has to be altogether detached for swinging the sash, a heavy sash would be left without sufficient counterbalance weight, and would require a little care in handling. In spite of these partial drawbacks, the invention is a clever and ingenious one, and worth the attention of architects.

Exhibitions in Antwerp.—Antwerp intends to hold two exhibitions, viz., a national one in 1894 and an international one in 1895.

The English Iron Trade.—No amelioration is experienced in the English iron market. Nearly all descriptions of crude and finished material show signs of inactivity. Tin plates are very quiet, and a dull tone is observable in the majority of branches in the steel trade. Bessemer pig is again weaker. Shipbuilding prospects do not improve, and in engineering circles complaint is made of increasing slackness. The coal trade is a trifle sluggish.—*Iron.*

Plumbing Classes, Lincoln.—The Mayor of Lincoln was announced to preside over a public meeting to be held in the Town Hall, Lincoln, on Friday of this week, for the purpose of opening the plumbing classes held in connexion with the Lincoln School of Science and Art; the meeting being under the auspices of the Lincolnshire District Council for the National Registration of Plumbers.

Ventilation for Steamships.—We are informed that a large Atlantic Steamship Company are about to spend about 100,000*l.* in fitting their vessels with mechanical ventilation, the system adopted being Messrs. Baird, Thompson, & Co.'s patent combined system of mechanical and automatic ventilation.

An Ancient Painting.—According to the *Halesworth Advertiser*, an important example of a Mediæval painting of the Last Judgment has been discovered in the work of restoring Wenhaston Church, in Suffolk. The painting is on oak boards which once formed "the upper part of the screen dividing the chancel from the church," so says the local paper; but the "upper part" of the rood-screen is surely a mistake, as that would be open; it is the lower part of the Suffolk and Norfolk rood-screens which is so frequently painted. The paper referred to gives a lengthy description of the work, which evidently presents the usual features of a Mediæval "Doom" painting, but it appears to be in unusually good preservation. "The picture," we are told, "was evidently subdivided into panels by an immense wooden cross fastened on with bolts, of which only the holes now remain, and the two bottom side panels were apparently formed by the carved images of patron saints which have also disappeared."

LEGAL.

INSUFFICIENT THICKNESS OF WALLS.

ELLIS MARSLAND *v.* W. J. GOLDSWORTHY.

On September 27 at the Lambeth Police-court, before Mr. Biron, Q.C., Mr. W. J. Goldsworthy, builder, was summoned at the instance of Mr. Ellis Marsland, District Surveyor for Camberwell, for erecting in the Friern-road, East Dulwich, a three-story building exceeding 25 ft. in height with walls only 9 in. in thickness. The Surveyor produced a section and photograph of the building showing that the height to the top of the topmost story was 28 ft. 2 in., and that according to Part I. of the first schedule, table 2, of the Building Act, the thickness of the ground story should be 13 in. On the part of the defendant it was urged that the rooms in the roof were only box-rooms, but as one was 7 ft. 6 in. in height, and the other 9 ft. 2 in. and each contained a window and one a fireplace, the magistrate was of opinion that the two

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Nature of Work.	By whom Advertised.	Premium.	Designs to be delivered.
ounty Buildings	Anglesey C. C.	.....	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Repairs, &c. to Workhouse	Leeds Union	*Official*	Oct. 4
New Schools, Wheldon-road	Castleford School Bd.	R. M. McDowall	do.
New Street	Plymouth Corp.	G. D. Bellamy	do.
Earthenware Pipe Sewers	Uttoxeter U.R.S.A.	J. Collyer	do.
Tank, Iron Pipes, &c.	St. German's U.R.S.A.	*Official*	Oct. 5
Timber	Swansea Harb Trust	A. J. Schenk	do.
About Eighty Houses, near Bargoed, Glam.	G lfach-Fargoed - Fach Building Club	T. Roderick	do.
*Road Paving Works	Hammersmith Vestry	H. Mair	do.
Flagging and Paving	Baydon Local Board	Michael Hawdon	Oct. 6
Offices and School, Elgin, N.B.	.....	A. & W. Reid	Oct. 7
Additions, &c. to Distillery, Rothes, N.B.	.....	do.	do.
*Horsekeeper's House, Stabling, &c. Leicester	Midland Railway	*Official*	do.
Sinking a Well, Bilborough	Tadcaster R.S.A.	do.	Oct. 8
Additions to Flour Mills, Woodside, Eland	.....	Horsfall & Williams	do.
Steel Viaduct over River Neath	Rhondda and Swansea Bay Railway	S. W. Yockney	do.
Sinking a Shaft, Mardy	Locket's Merthyr Steam Coal Co. Lim.	Wm. Thomas	Oct. 10
*Paving New Street	Camberwell Vestry	*Official*	do.
*Storage Reservoir Embankment, near Burnley	Towneley Estate	M. Paterson	Oct. 11
*Stoneware Pipes, Bends, and Junctions	Norwich Corporation	L. P. Marshall	do.
*Erection of Hydraulic Installation Buildings, &c.	Manchester Ship Canal Co.	*Official*	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Construction of Sewer	Chesbunt Local Board	*Official*	Oct. 11
*Roadmaking and Paving Works	Willesden Local Board	O. Claude Robson	do.
*Wrought-iron Hurdles	London County Council	*Official*	do.
*Road Paving Works	Vestry of Mile End Old Town	J. M. Knight	Oct. 12
*Making-up Roads, &c	Fulham Vestry	W. Sykes	do.
*Wrought-iron Unclimbable Fencing	Headon Local Board	S. S. Grimley	Oct. 15
*Roads and Sewers	Edmonton Freehold Land, &c Co Lim.	H. W. Dobb	Oct. 17
*Paving Roads, &c.	Islington Vestry	*Official*	do.
*Dock Sheds	Manchester Ship Canal Co.	do.	Oct. 28
*Woodwork, &c. of Pavilion	Clacton-on-Sea Pier Co. Lim.	Kinipple & Jaffrey	Nov. 1
School Buildings Elswick	Newcastle School Bd.	Dunn, Hansom, & Dunn	No date
House, Stable, &c. Great Preston, near Leeds	J. Watkinson	.....	do.
Re-building "Swan" Hotel, Hightown, Sandbach	.. ..	Bird & Whittenbury	do.
School Buildings, Hopper-street, Gateshead	.....	Stephen Piper	do.
Alterations, &c. to High House, Morpeth	C. G. Rayne	Freeman & Robins	do.
Business Premises, High-street Cardiff	J. James & Co.	Seward & Thomas	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Engineer's Assistant	Watford Local Board	.....	Oct. 4
Resident Engineer	Barry Railway Co.	400*l.*	do.
*Clerk of Works	Burslem Corp	.....	Oct. 6
*District Surveyor	Lancashire C. C.	200*l.* &c.	Oct 7
*Clerk of Works	Manchester School Bd.	.....	Oct. 8
*Quantity Surveyor	Met. Asylums Board	.....	Oct. 10
*Draughtsman	Leicester Corp.	2*l.* 2s. per week	Oct. 13
*Second Class Assistant Surveyor	Civil Service Com.	.....	do.

Those marked with an Asterisk (*) *are advertised in this Number. Competition, p.* iv. *Contracts, pp.* iv., vi., *&* viii. *Public Appointments, p.* [illegible].

rooms constituted a story, and made an order that the top story should either be removed or the walls on the ground story made 13 in. in thickness.

BAD PLASTERING.

ELLIS MARSLAND *v.* C. WATTS.

On September 27 at the Lambeth Police-court, before Mr. Biron, Q.C., Mr. Charles Watts, builder, was summoned at the instance of Mr. Ellis Marsland, District Surveyor for Camberwell, for a breach of the By-laws relating to plastering at a certain house in course of erection in the Worlingham-road, East Dulwich.—The Surveyor produced several specimens of the plastering taken from the walls and ceilings of the building, also two analyses of the material showing from 15 to 18 per cent. of earthy matter, and explained that the defendant had a mortar mill, and surrounding it were heaps of all sorts of rubbish, which was ground up in the mill with a small proportion of lime and hair; whereas the By-laws provided that clean sharp sand, without loam or earthy matter, or ground brick, or furnace slag, to the satisfaction of the District Surveyor, mixed with lime in the proportions of 3 to 1, were the only materials allowed to be used, with the addition of hair.—The Magistrate fined the defendant 5*l.* and 2s. costs.

MEETINGS.

SATURDAY, OCTOBER 1.

Architectural Association.—Visit to St. Alban's Abbey, St Michael's Church and Gateway. Mr. James Neale, F.S.A., will act as guide. Train leaves at 2.5 p.m. from St Pancras.

Dundee Institute of Architecture.—Excursion to Clatto Reservoir and places of interest in the districts of Auchterhouse and Meigle.

MONDAY, OCTOBER 3.

Society of Engineers.—Mr. B. A. Miller on "The Cleansing and Ventilation of Pipe Sewers." 7.30 p.m.

TUESDAY, OCTOBER 4.

Sanitary Institute (Lectures for Sanitary Officers).—Sir Douglas Galton on "Ventilation, Warming, and Lighting." 8.0 p.m

Glasgow Architectural Association.—Mr. W. J. Anderson on "Street Architecture of Modern Glasgow." 8.0 p.m.

WEDNESDAY, OCTOBER 5.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting. 8.30 p.m.

THURSDAY, OCTOBER 6.

University College, London.—Professor T. Roger Smith on "Architecture an Art, a Science, and a Profession." 7.30 p.m.

FRIDAY, OCTOBER 7.

Architectural Association.—Opening Conversazione, to be held at the Imperial Institute, South Kensington. 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. H. Law on "Principles of Calculating Areas, Cubic Space, &c." 8 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

14,334.—WATER CLOSETS: *W. T. Allen.*—This invention relates to an improved form of adjustable water-closet, consisting of a reversible cone basin of earthenware, or other suitable material, of any required section, with combination of the same to be applied to the bottom of deep water-closets, with inlets right and left to connect the surface drain for flushing the same, the centre to be a receptacle for excreta to pass through a trap to the main drain.

14,935.—VENTILATION: *J. A. Hart and C. Baynes.*—This invention relates to an apparatus for the purpose of supplying fresh air to workshops or other apartments or buildings, the combination of fresh air inlet terminating in what is termed the upper stratum of the place to be ventilated, and there furnished with a fan, with the outlet for air therefrom around a horizontal, or approximately horizontal, periphery, so as to deliver fresh air into the said upper stratum in a comparatively thin layer or film, projected horizontally, so as to distribute the air through a considerable area without causing objectionable draughts in what are termed the lower stratum, or inhabited area of the workshop, &c. There are also, in combination with the fan, blades situated at the upper or lower side, or both, for creating currents of the air of the workshop, apartment, or building, to mix with the fresh air being forced therein by the fan.

17,846.—DRAIN-TRAPS: *J. M. Dobson.*—The objects of these improvements are the production of a better scour for the raising and washing out of the suspended and solid matter; the lessening of the volume of water forming the seal of the trap, so as to offer the least possible resistance to the action of the inflow of sewage giving the scour; and the shortening and lightening of the trap, that it may be more easily handled, and cost less in its application to existing drains. For details we must refer our readers to the drawings attached to the specification.

814.—MASON'S TOOLS: *J. G Faulds.*—This invention relates to mason's chisels, and like tools, and has for its object to make a single tool with interchangeable bits, so as to take the place of a number of tools as at present. The inventor makes the chisel with the usual metallic shaft, or handle, which is broadened or flattened out and tapered at its lower end. The flattened out part is made with a preferably tapered groove, or recess. Into the recess or groove is fitted a bit, of which there may be any desired number to suit the different classes of work. The bit is preferably tapered, so as to fit into the recess, the latter being left with end walls, or projections, to prevent the bit having lateral movement when being used.

9,583.—SYPHON CISTERN: *R. Bocock.*—This invention relates to an improved syphon cistern for flushing water-closets. The short end of the syphon is connected to back of service box, which has a loose plate working in a groove. The connecting rod is pivotted on to a lever and to the loose plate, and on pulling down the handle on the lever it pushes the loose plate down to the bottom of the service box, thereby forcing the water in the service box up into and over the crown of the syphon, and starting the flush. The flow of water keeps the plate down on the bottom of the service box until the cistern is emptied, when a weight lifts the plate into position. After discharge has taken place, the cistern is refilled by means of a ball-tap water-filling service box round the edge of the loose plate.

12,574.—DOOR-SUPPORTS: *A. Gerber.*—This invention consists essentially in applying to doors, which have hitherto been swung free and supported only by their hinges or hooks, supporting or guiding rollers at the extreme, or almost extreme, end of the free-swinging under edge of the door, acting in every position of the door, and so taking the weight off the hinges or hooks.

12,827.—SEWER-TRAPS: *R. Newton.*—This invention has reference to improvements in the class of sewer-traps in which a water seal is secured to shut off the flow of sewer-gas, and consists in the peculiar construction of the trap. The object of the invention is to construct a trap in which the syphon will be broken as soon after the first inrush of water to the trap as air may enter the trap, so that a sufficient quantity of water must at all times remain in the trap to secure a practical and sufficient seal. It consists of a chamber having an inlet and outlet practically on the same level. The lower end of this chamber is closed by a cap soldered thereto, and at the top of the chamber a flanged ring is soldered to the inner edges thereof. The flange of this ring is furnished with holes, through which securing devices, such as bolts, extending through the edges of, or fastened to, the plate, are passed and secured, thus holding this plate down to close the upper end of the chamber. Extending from the upper edge of the chamber is a partition dividing the upper portion of the chamber into two unequal parts, the larger being on the outlet side. This partition extends to within a short distance of the bottom of the chamber. Directly beneath the outlet the wall of the chamber is bulged outward to form a recess, and immediately above this recess is clamped a frame by means of screws passing through a band or plate on the outside of the chamber, and through perforations in this wall of the chamber. This frame is shaped to conform to the cross sectional shape of one half of the chamber, and is adapted to support a cross partition provided with a depending lip, between which and the partition is left a long, narrow opening.

NEW APPLICATIONS FOR LETTERS PATENT.

September 12.—16,284, W. Jennings, Electric Call-bell Indicators.—16,321, R. Kelly, Hand-power Tenoning-machine for wood working.

September 13.—16,341, T. Caink, Sewer Ventilators.—16,353, H. Richter, Holder for Sliding Sash Windows.—16,354, J. Keseling and C. Fuchs, Artificial Stone.—16,415, M. Turpin, Parquet Floors and Wall Linings.

September 14.—16,429, J. Mothersill, Door-knobs and Spindles.—16,435, P. Bronner, Production of White Lead direct from Galena.—16,438, E. Smith, Spring Latches for Doors.—16,448, J. Bartlett, Warming and Ventilating Buildings.

September 15.—16,479, J. Keal, Flush-out Water-closets, flushed with waste water.—16,519, T. Brown, Sash-fasteners.—16,523, J. Northcott, Door-bolts.

September 16.—16,556, W. Dearle Cowls or Tops for Chimneys and Ventilating-shafts—16,573, H. McKenna, New process for the manufacture of Paints, Varnishes, and strong Cements.

September 17. 16,600, W. Westlake, Door-holder.—16,606. F. Baker, Window-fastening.—16,612, R. Cartwright, Water-closet Apparatus.—16,619, Yates, Haywood, & Co., and others, Adjustable Fire-grates.—16,623, W. Rees, Grates or Stoves.—16,633, T. Atherley, Syphon Cisterns.—16,649, G. Evans, Wood-screws.—16,656, F. Plumstead, Electric-light Fittings.

PROVISIONAL SPECIFICATIONS ACCEPTED.

11,593, E. Ballard, Wall Ventilator.—12,471, W. Rockliffe and E. Jobling, Door-frames.—13,946, M. Syer, Syphon Flushing Tank.—13,947, C. Openshaw and R. Wood, Ventilating Brick, for building in brick or other walls, to carry joists or other wall timbers to prevent rot.—14,226, G. Martin, Glazing Roofs and Skylights.—14,231, J. Wall and J. Ross, Ladders.—14,238, S. Challen, Sash Windows—14,297, J. Lester, Fastenings for Door-knobs.—14,577, G. O'Reilly, "Wedge" Door-handle Fastener.

COMPLETE SPECIFICATIONS ACCEPTED.

(*Open to Opposition for Two Months.*)

15,823, D. Morison, Flanges for Pipes.—18,162, H. Gover, Electrical Lamp and other Fittings.—19,511, I. Main, Greenhouses and similar Horticultural Buildings.—19,877, C Nube, Adjustable Clamps for Bench Vices.—11,052, B. Powell, Pipe Joints.—14,724, E. Edwards, Feeding and Driving-in Nails.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

SEPTEMBER 20.—By *G. Brinsley*: 89, Walton-st., Chelsea, f., r. 36*l* 8s., 490*l*.—By *F. Jolly & Co.*: 13 to 21 (odd), Walker-st., Bow, u.t. 73 yrs, g.r. 17*l*. 10s., r. 140*l*. 18s., 1,280*l*.; 1 and 3, Robeson-st., u.t. 70 yrs., g r. 3*l*., 600*l*.

SEPTEMBER 21.—By *Wells & Read*: 56, 58, 60, and 64, Burley-rd., Stamford-hill, u.t. 92 yrs., g r. 30*l*., 1,810*l*.—By *D. Young*: 13, Ceylon-rd., Kensington, f., r. 26*l*., 270*l*.; 1 Freegrove-rd., Holloway, u.t. 64 yrs., g.r. 6*l*., r. 45*l*., 375*l*.; 9 and 11, Freegrove-rd., u.t. 64 yrs., g r. 12*l*., r. 84*l*. (including mortgage), 740*l*.; 16, Freegrove-rd, u.t. 64 yrs, g r. 6*l*. (including mortgage), 355*l*.—By *H. Griffin*: 9 to 12, Winders-rd., Battersea, u.t. 63 yrs, g r. 20*l*., r. 112*l*. 4s., 785*l*.

SEPTEMBER 22.—By *F. Perks*: The lease of No. 159, Piccadilly, u.t. 90½ yrs., r 370*l*., 1,700*l*.—By *C. N. Phillips*: "Carlingford House," Willoughby-rd., Hampstead, f., r. 70*l*., 990*l*.—By *H. J. Bliss & Sons*: 82 and 84, White Horse-lane, Mile End, f., 670*l*.; l.g.r. of 24*l*., Bishop's-rd., &c, Bethnal Green, u.t. 51 yrs., 405*l*.; 55, Straham-

rd., u.t. 59 yrs., g.r. 5*l.* 10s., 295*l.*; 10, 11, and 12, Albert-ter., Islington, u.t. 55 yrs., g.r. 6*l.*, 750*l.*; 22 to 28 (even), Eagling-rd., Bow, u.t. 70 yrs., g.r. 12*l.* 4s., 400*l.*—By *Farebrother, Ellis, Clark, & Co.*: f.g.r. of 350*l.*, Fleet-st., City of London, reversion in 22 yrs., 11,770*l.*; a profit rental of 170*l.* a year, 32, Wood-st., u.t. 47 yrs., 3,100*l.*; 25, Philip-lane, u.t. 51 yrs., g.r. 17*l.*, r. 84*l.*, 1,260*l.*; 6, 7, and 8, Creed-lane, u.t. 10 yrs., g.r. 2*l.* 5s., r. 140*l.*, 690*l.*—By *Stimson & Sons*: 7, Atherton-st., Battersea, u.t. 80 yrs., g.r. 5*l.*, 290*l.*; 253a, 255a, 257, 259, and 261, New Cross-rd., New Cross, u.t. 18 yrs., g.r. 24*l.*, 1,170*l.*: 1. 2, and 3, Hart's-lane, u.t. 18 yrs., no g.r., 435*l.*; 64 and 66, Lothian-road, Camberwell, u.t. 70 yrs., g.r. 10*l.*, 335*l.*; 16, Castle-street, Borough, f., r. 23*l.* 8s., 220*l.*: 40 and 41, Henry-st., f., 230*l.*; f.g r. of 15*l.* Tabard-st, reversion in 44 yrs., 295*l.*—By *C. C. & T. Moore*: 125, Narrow-st., Limehouse f., r. 42*l.*, 375*l.*; 37, Approach-rd., Victoria Pk, u.t. 62 yrs., g.r. 5*l.*, 420*l.*; 153 and 155, Bridge-st., Mile-end, u.t. 54 yrs., g.r. 6*l.*, 470*l.*; 12 to 42 (even), Burdett-rd., comprising l.g.r. of 36*l.*, u.t. 56 yrs., and rentals of 320*l.*, g.r. 62*l.*, same term, 3,205*l.*; 44 to 52 (even), Burdett-rd., and a l.g.r. of 10*l.* 10s., u.t. 56 yrs., g.r. 22*l.*, subject to an annuity of 50*l.* a year, 800*l.*, 1 to 8, Victoria-villas, Tooting, f., 2,020*l.*; the residence, "Haslemere." Robinson-rd., f., r. 32*l.*, 470*l.*; 1 to 4, Gothic-villas, u.t. 88 yrs., g.r. 22*l.*, r. 98*l.*. 580*l.*

SEPTEMBER 23.—By *Baker & Sons*: "Longleat House," George-lane, Woodford, f., r. 35*l.*, 510*l.*; a plot of f. land, Horsham-rd., Bramley, near Guildford, 140*l.*; four freehold houses, r. 59*l.* 16s., 500*l.*; an enclosure of land, 2¼ acres, 340*l.*—By *Green & Son*: an enclosure of leasehold land, West Ferry-rd., Millwall, 6 acres, u.t. 50 yrs., g.r. 75*l.*, and eleven cottages thereon, 600*l.*—By *Herring, Son, & Daw*: No. 10, Brixton-hill, u.t. 15 yrs., g.r. 16*l.* 10s., 380*l.*

[Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g r. for ground-rent; r. for rent; f. for freehold; c. for copyhold: l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G. ton	9/0 0	0 0 0
Teak, E.I... load	9/10/0	15/0/0
Sequoia, U.S.ft.cu.	2/4	3/0
Ash, Canada load	2 10/0	4 0/0
Birch, do.	3/5/0	4 10/0
Elm, do.	3/10/0	4 15/0
Fir, Dantzic, &c.	1/10/0	3/10/0
Oak, do.	3/0/0	5/5/0
Canada.....	5/10/0	7/0/0
Pine, Canada red	2/10/0	3/10/0
Do, yellow	2/10.0	5/0/0
Lath, D'ntzic, fath	5/0 0	6/0/0
St. Petersburg	5 0 0	7/0 0
Deals, Finland 2nd & 1st std 100	7/10.0	9/10,0
Do, 4th & 3rd..	7/0/0	8/0.0
Do. Riga	6/10 0	8/0 0
St. Petersburg, 1st yellow ..	10/10,0	14/10/0
Do. 2nd yellow	8/0/0	9/10/0
Do. white	7/0/0	9/10/0
Swedish	7/0/0	16/0/0
White Sea	8/0/0	17/0/0
Canada, Pine 1st	20/0/0	26/10/0
Do. do. 2nd....	14/10/0	16/0/0
Do. do. 3rd, &c.	7/10/0	10/0/0
Do. Spruce. 1st	8 10/0	11/0 0
Do. do. 2rd & 2nd.....	6 5 0	8/0/0
New Brunswick	6 10.0	7/0/0
Battens, all kinds	8/10/0	15 10 0
Flooring Boards, sq., 1 in. prep. 1st	0 8/0	0 13 0
Do. 2nd.....	0 7/0	0 10,0
Other qualities	0/3 0	0 7/6
Cedar, Cuba ..ft.	/3½	/4½
Honduras, &c.	/3½	/4
Mahogany, Cuba.	/4½	/6½
St. Domingo, cargo av	/4	2/0
Mexican do. do	/4	/5
Tobasco do. do	/5½	/7
Honduras do..	/5½	/6½
Box, Turkey ton	4/0/0	13/0/0
Rose, Rio.....	10/0 0	20/0/0
Bahia	9 0 0	18 0 0
Satin, St. Domingo ...ft.	0 0 7	0/1/8
Porto Rico	0.0/7	0/1/6

TIMBER (*continued*).		
Walnut, Italian..	0 0 3½	0/0/7
METALS.		
IRON—Pig, in Scotland.....ton	2/1/8	0/0/0
Bar, Welsh, in London.....	5/17/6	6 0/0
Do. do. at works in Wales	5/7/6	5/13/0
Do. Staffordshire, in London	6 5/0	6 15,0
COPPER—British, cake and ingot	47.0 0	47/10/0
Best selected ..	48.0/0	48.10/0
Sheets, strong..	55/0/0	0/0/0
Chili, bars	43/18 9	44/6/3
YELLOW METAL lb.	0/0/4½	0/0/5½
LEAD — Pig, Spanish ....ton	10/6 3	10/7/6
English, com. brands	10.10/0	10/12/6
Sheet, English, 3 lbs. per sq. ft. and upwards ..	11/15/0	0,0,0
Pipe	12/5/0	0/0,0
ZINC — English sheet .....ton	£3 0/0	0/0.0
Vieille Montagne.....	£3 10 0	0 0,0
TIN—Straits	91/17.6	92.7/6
Australian	92.7/6	92/17/6
English ingots.	94/15 0	95/0 0
Banca	93/10.0	0/0/0
Billiton	94/0/0	0/0/0
OILS.		
Linseed .....ton	17/15/0	17/17/6
Cocoanut, Cochin	24/10.0	0.0/0
Do. Ceylon	21/10/0	0 0'0
Palm, Lagos	24/0/0	0/0.0
Rapeseed, English pale	23.10.0	24'0/0
Do. brown	21/15/0	22/0/0
Cottonseed ref...	18/0.0	0/0/0
Oleine	20/10/0	21/0/0
Lubricating, U.S.	4/0/6	5/0/0
Do. refined	5/10/0	12/0/0
TAR — Stockholm barrel	0/19/0	0/0/0
Archangel	0/12/6	0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 12 *noon on Thursdays.*]

ALLENSMORE (near Hereford).—Accepted for new offices and other improvements to the schools, for the School Board Committee. Mr. G. H. Godsell, architect, Hereford:—
Jas. Davies, Hereford £125 0 0

ASHFORD.—For the erection of small detached villa residence, at Ashford, Middlesex, for Mr. F. J. Craswell. Mr. John Job Wood, architect and surveyor, No. 4, Khyber-road, Batterses, S.W. Quantities supplied:—

Barker	£395 10	Bates.....	£388 5
Martin	389 0		

[Surveyor's estimate, £383. 10s.]

BLACKPOOL.—Accepted for fittings M. & C. Bank, South Shore, Blackpool. Messrs. Maxwell & Tuke, architects, 41, Corporation-street, Manchester:—
Messrs. Gillons & Co., Lancaster £287 15 6

BRISTOL.—For alterations and additions to Whitehouse-street tannery, Bedminster, for Messrs. Parker Bros., Limited. Mr. Herbert J. Jones, architect:—

J. Perrott.....	£1,815 0	E. Gay.....	£1,707 10
J. Bastow.....	1,809 0	G. H Wilkins	1,680 0
Cowlin & Son	1,802 0	Eastabrook & Son*	1,67J 0
W. Church	1,740 0	* Accepted.	

[All of Bristol.]

CHESHAM (Bucks.).—For rebuilding "The Three Tuns," Whitehill, for Messrs. Salter & Co., Limited, of Rickmansworth Brewery. Mr. Chas. P. Ayres, architect, 14, High-street, Watford:—

Dove & Co.	£925	G. Darvell.....	£729
Darlington	840	A. Mead, Chesham*	695
T. Turner, Limited	787	* Accepted.	

FOWEY (Cornwall).—Accepted for alterations to premises at Fowey, for the Cornish Banking Company, Limited. Mr. Sampson Hill, architect and surveyor, Redruth:—
Nathaniel Pente Polruan £262 0 0

LANGAR (Notts).—For new residence, Hall Farm, Langar, for Mr. Tounman Mosley. Mr. Arthur Vernon, architect, 29, Cockspur-street, London, S.W.:—

Walter Wilson.....	£1,915 10 0	Gilbert & Gabbitass,	
J. Freeman Bates ..	1,875 15 5	Nottingham*	£1,727 10 9
		* Accepted.	

LEAVESDEN (Herts).—For rebuilding "The Brickmakers' Arms" for Messrs. Benskin & Co., of Cannon Brewery, Watford. Mr. Chas. P. Ayres, architect, 14, High-street, Watford:—

Dove & Co.	£490	T. Turner, Limited, Watford	£427
Waterman	409	T. Turner, Limited, Watford*	448
Busby.....	400		
Neal	439		
* Amended estimate accepted.			

LICHFIELD.—Accepted for additional accommodation at the Lichfield Regimental District Barracks, for the War Office:—
John Gethin, Shrewsbury £18,732 10 0

LINCOLN.—For the conversion of National Schools into Municipal Offices for the Lincoln Corporation. Mr. R. A. MacBrair, A.M.Inst.C.E., City Engineer. Quantities supplied:—

S. & R. Horton	£1,447	M. Otter & Co.....	£1,400
W. Wright & Sons.....	1,433	H. S. & W. Close.....	1,395
Chas. Morgan	1 416	Geo. Cowen	1,395
J. M. Harrison	1,415	J. W. Harrison (accepted).	1,253
[All of Lincoln.]			

LONDON.—For compounding, &c., engines and other works at the Abbey-mills pumping-station, for the London County Council. Mr. Alexander Binnie, Engineer:—

	For 4 engines.	For 8 engines.
Clayton, Goodfellow, & Co.	£21,800 0	£13,000 0
Pollitt & Wigzell, Limited	19,250 14	35,650 15
J. Penn & Sons.....	18,200 0	29,500 0
Fullerton, Hodgart, & Barclay, Limited	15,320 0	25,300 0
The Thames Ironworks and Shipbuilding Co.	13,500 0	22,500 0
Easton & Anderson, Limited	12,600 0	21,400 0
J. Watt & Co.	10,400 0	17,250 0
Yates & Thom	10,400 0	16,980 0
B. Goodfellow	10,200 0	19,200 0

LONDON.—For the erection of a house for the chemical assistant at Barking outfall, for the London County Council. Mr. A. Binnie, Engineer:—

J. Mowlem & Co.	£1,969	Norris & Luke.....	£1,624
E. Proctor.....	1,675		

LONDON.—For the reconstruction of the Limekiln Dock Sewer, for the London County Council. Mr. Alexander Binnie, Engineer:—

J. Dickson	£13,531 13 5	E. & W. Iles	£10,074 18 3
T. Adams.....	10,633 7 3	J. Mowlem & Co. ..	9,931 0 0

LONDON.—For the reconstruction of the Barking-road Bridge, for the London County Council. Mr. Alexander Binnie, Engineer:—

J. Dickson	£96,895 0 0	G. Double	£60,373 10 6
W. Webster	67,720 0 0	A. Tharoe	58,863 5 7
E. Pearson & Sons..	64,370 0 0	G. Jackson	50,962 17 7
The Tees Side Iron and Engine Works Co., Limited	60,732 3 5	The Thames Ironworks and Shipbuilding Co, Ltd.	47,865 5 8

LONDON.—For the erection of working-class dwellings in Yabsley-street, Poplar, for the London County Council. Mr. Thomas Blashill, Architect:—

Kirk and Randall	£15,319 0	J. Chessum & Sons....	£14,168 0
J. Holland	14,803 0	F. J. Pearce	11,385 17
Brass & Sons	14,633 0		

LONDON.—For the erection of a lodge, &c., at Plumstead Common, for the London County Council. Mr. Thomas Blashill, Architect:—

Norris & Luke	£1,412	L. Whitehead & Co.	£943
J. Garrett & Son	1,299	H. Faulkner, junr.	940
Bastin & Tawney.....	1,080	W. Akers & Co.	889
E. Proctor	1,077		

LONDON.—For the erection of a refreshment-house, at Dulwich Park, for the London County Council. Mr. Thomas Blashill, Architect:—

E. Proctor £1,030		E. H. Wheeler	£767
J. Garrett & Son	990	C. Godbolt	694
W. H. Lascelles & Co.....	869	W. Akers & Co.	689
Bastin & Tawney	860	H. Faulkner, jun.....	668
A. Wallis	787		

LONDON.—For the restoration of Lauderdale House, Waterlow Park, for the London County Council. Mr. Thomas Blashill, Architect:—

W. Reason.....	£3,844	Marchant & Hirst	£2,952
W. J. Alldred	3,450	J. Garrett & Sons	2,950
E. Proctor	3,420	J. W. Dixon.....	2,643
F. & F. J. Wood	3,240	W. Wells	2,545
Stevens Bros.	3,042	E. Hughes.....	2,476
A. Willis	2,987		

LONDON.—For the enlargement of the boys' and girls' departments of the Portobello-road School, Notting-hill, by eighty places, and for erecting new water-closets for all departments of the school, for the School Board for London. Mr. T. J. Bailey, Architect:—

		If brickwork be built in cement, add.
Cowley & Drake.....	£3,018 0 0	£71 0 0
J. Garrett & Son	2,673 0 0	90 0 0
G. Lyford.....	2,687 0 0	113 0 0
C. Dearing & Son	2,593 0 0	78 0 0
T. McCormick & Sons.....	2,551 0 0	69 0 0
T. W. Haylock	2,549 0 0	62 10 0
L. Whitehead & Co.....	2,475 0 0	55 0 0
F. J. Coxhead	2,450 0 0	70 0 0
J. Willmott & Sons, Hitchin*	2,179 0 0	58 0 0
* Recommended for acceptance by the Works Committee.		

LONDON.—For alterations and decorating to premises, 145, Holborn, E.C., for Mr. W. Kirkland. Mr. Walter Graves, architect, Winchester House, Old Broad-street:—

Sage	£1,496	G. Shaw	£1,235 0
Pitman & Son	1,369	London & Co.	1,155 0
Little & Senicle	1,270	Maxwell & Co.	999 0

Revised Tenders.

Sage	£1,179	G. Shaw	£995 0
Pitman & Son	920	London & Co.....	845 10

LONDON.—For the enlargement of the London Salvage Corps Station, Southwark Bridge-road. Mr. William Wimble, architect:—

Morter	£16,975	Greenwood	£16,623
Rider & Sons	16,908	Downs	16,386
Scrivener & Co.....	16,787	Lawrance & Sons	16,163
Colls & Sons	16,650		

LONDON.—For the erection of a factory at Kentish Town N.W. Messrs. Henry Ough & Son, architects, 79, St. Paul's Churchyard, E.C. Quantities by the architects:—

Woodward & Co.	£3 790	Atherton & Latter	£3 195
W. Dabbs	3,543	F. Dupont	3,143
Hearle & Farrow	3,450	J. W. Sawyer	2,992
Perry & Co.....	3,300	W. Gladding*	2,849
A. J. & C. Hocking.....	3,250	* Accepted.	

LONDON.—For the erection of house at Marsden-road, East Dulwich, for Mr. E. A. Thompson:—

Hurley & Son	£494 16	Sloman	£380 0
W. Smith	489 0	A. & W. Garnar.....	365 0
T. Sayers.....	4.0 0	L. Notley	355 0

LONDON.—For erecting addition to the "Black Bess" Coffee Tavern, North-road, Finchley, N., for the Directors:—

Holloway Bros	£830	Johnson	£785
Bracher & Sweetland	819	McCormick & Sons*	740
		* Accepted.	

LONDON.—For the erection of the Cave-road Schools, Plaistow, E., to accommodate 1,577 children, for the West Ham School Board. Messrs. J. T. Newman & Jacques, Architects to the Board, 2, Fencourt, E.C. Quantities by Messrs. R. L. Curtis & Son, London Wall:—

Hearle & Farrow	£17,500	Sharpe	£16,896
Gregar & Son	16.764	Maddison.....	16,504
Hosking	16,717	Morter*	16,433
Catley	16,666		
* Accepted subject to the approval of the Education Department.			

LONDON.—For alterations and additions to the "Plough Inn," High-road, Tottenham, for Mr. F. Perrin. Mr. John E. Pinder, architect and surveyor, Bridge House, South Tottenham:—

J. G. Todd	£499	F. Voller*.....	£400
S. Goodall.....	480	* Accepted.	

LONDON.—For alterations at No. 149, Strand, for the Aërated Bread Company. Mr. Geo. Edwards, architect, 82, Cannon-street, E.C.:—

Scharien & Co.....	£1,217	Ward & Lamble	£1,193
Barnett	1,198		

LONDON.—For alterations and additions to 230, Upper-street, Islington, for Messrs. Galloway & Sons. Mr. E. H Abbott, architect, 6, Warwick-court, High Holborn. Quantities by Mr. A. Johnson, Imperial-buildings, Ludgate-hill:—

Godden	£2,952	Drew & Cadman.....	£2,455
Shurmur	2,736	Hall, Beddall, & Co.....	2,430
Wontner, Smith, & Co....	2 684	Anley	2,372
Bywaters	2,506		

LONDON.—For pulling down and rebuilding No. 41, Old Compton-street, and 46, Dean-street, Soho, W. Messrs. Farebrother, Ellis, Clark, & Co., architects. Quantities by architects:—

C. Wall	£3,055	Pattison.....	£2,225
Hall, Beddal, & Co.	2,365	Downs	2 227
Lea & Co	2,290	Nightingale	2,193
Lawrence	2,247		

LONDON.—For building house, &c., at Frognal, Hampstead, for Mr. Julius Wilson. Messrs. Batterbury & Huxley, architects. Quantities by architects:—

C. W. Bolus	£7,505	Nightingale	£6,870
Bywaters	7,084	Holloway Bros.	6,840
J. Wall	6,931	Patman & Fotheringham .	6,794
Hy. Brown	6,907		

LONDON.—For the erection of public baths, for the Woolwich Local Board of Health. Mr. H. H. Church, architect, Woolwich:—

Godson & Sons	£19,963	Wallis & Sons.....	£17,880
Chapman.....	18,984	Kirk & Randall.....	17,000
Reed, Blight, & Co.....	18,832	Lorder & Son.....	16,881
B. E. Nightingale...	18,225	H. L. Holloway (accepted)	16,530

LONDON.—For alterations to Christ Church, Lee, S.E.:—

Havill.....	£803	Lea	£734
Jerrard	767	Kennard Bros. (accepted) ..	715

LONDON.—Accepted for the erection of dwelling-house, Blackheath, S.E., for Mrs. Nesbitt:—
Kennard Bros. £950 0 0

LONDON.—Accepted for the erection of a dwelling-house, for the Rev. Charles Spurgeon, Blackheath, S.E.:—
Kennard Bros. £1,100 0 0

MAINDEE (Mon.).—For the erection of new vicarage, Eveswell Park, Maindee, for the Rev. J. Swinnerton. Mr. Alfred Swash, architect, 3, Friar's-chambers, Newport:—

Geo. Wilkins	£1,650	Thos. Webb	£1,490
J. T. Morris	1,649	W. A. Linton	1,460
Thos. G. Diamond.....	1,550	Dyson Parfitt	1,444
Chas. Lock	1,495	Rees Williams	1,325
J. B. Jenkins	1,490	W. J. Langmaid	1,300

NEWPORT (Mon.).—For the erection of new schools, Durham-road, Newport. For the Newport (U.D.) School Board. Mr. Alfred Swash, architect, 3, Friar's-chambers, Newport:—

W. Jones & Son	£5,795	Thos. Webb	£5,499
Morgan & Roberts	5,730	Chas. West	5,487
Pitt & Wyatt	5,652	W. M. Blackburn	5,474
Dyson Parfitt	5 636	Chas. Lock	5,383
Jno. Linton	5,550	W. J. Langmaid, Newport (accepted).....	4,836
Geo. Wilkins	5,509		

NEWPORT (Mon.).—For rebuilding Nos. 11 & 12 Commercial-road, Newport, for Messrs. Mordey & Carney. Mr. Alfred Swash, architect, 3, Friar's Chambers, Newport:—

Thos. G. Diamond	£1,400	Morgan & Roberts	£1,250
Edwyn Richards..... ..	1,387	Dyson Parfitt	1,244
W. J. Langmaid	1 300	Geo. Wilkins	1,170
Thos. Webb	1,279	Rees Williams, Newport *.	1,140
* Accepted.			

NEWPORT (Mon.).—For additions to Board Schools, Newport, for the Newport (U.D.) School Board. Mr. Alfred Swash, architect, 3, Friar's Chambers, Newport:—

Alexandra-road Schools.

E. Richards	£98 0	Thos. Webb	£90 0
Wm. Price	97 0	Chas. West.....	60 0
T. G. Diamond.....	93 0		

Bolt-street Schools.

T. G. Diamond	£139 0	Wm. Price	£131 0
E. Richards	136 10	Chas. West	110 0
Thos. Webb	136 0	Jno. Dayman (accepted) .	99 17

Chepstow-road Schools.

E. Richards	£93 0	T. G. Diamond	£84
Wm. Price	89 0	Chas. West.....	75 15
Thos. Webb	86 0	Jno. Dayman (accepted) .	72

Eveswell Schools.

Chas. West.....	£145 0	Thos. Webb	£144 10

NORTHAMPTON.—For the erection of a Sunday School, St. Michael's-road, Northampton. Mr. S. J. Newman, architect, 32, Abington-street, Northampton:—

G. W. Souster	£555	A. J. Chown	£498
J. Douglas.....	54.	J. Robinson.....	496
J. Woodford & Son	538	A. Wilford	485
Green Bros. (accepted).....	506	[All of Northampton.]	

ORCOP (near Hereford).—For new class-rooms and other alterations (exclusive of fittings) to the schools, for the School Board Committee. Mr. G. H. Godsell, architect, Hereford:—
F. Tilley, Ross £294 0 0

PRESTEIGNE.—Accepted for new class-room to the National Schools. Mr. G. H. Godsell, architect, Hereford:—
J. Price, Presteigne £285 0 0

PRESTEIGNE.—Accepted for heating with hot-water radiators (exclusive of mason's and carpenter's work) Boultifrooe Mansion. Mr. G. H. Godsell, architect, Hereford:—
Jones & Attwood, Stourbridge £106 0 0

PUTNEY.—For erecting the Mission Hall at Seyton-street Putney. Mr. R. H. Hill, architect:—

W. Downs	£980	O. Craske	£894
B. E. Nightingale	944	Hollingsworth	890
Leslie & Co.	916	D'Oyley & Co.....	849

ST. ALBANS.—For erecting a pair of cottages at Westwick Hall Farm, for the Rt. Hon. the Earl of Verulam. Mr. Chas. P. Ayres, architect, 14, High-street, Watford:—

M skin	£ 85	T. Turner, Limited	£360
Savage	576	G. & J. Waterman*	542
* Amended and accepted.			

SOUTH NORMANTON.—For the erection of a board school for boys, South Normanton, Derbyshire. Mr. A. Macpherson, architect, 16, Tenant-street, Derby :—

Hinsley	£4,598	Ford & Co.	£3,790
Walker & Slater	4,080	Brennan	3,763
Keeling	3,900	Weston	3,510

SOUTH SHIELDS.—For the extension of Corporation Stables South Shields. Mr. Matthew Hall, Borough Engineer :—

T. Banks	£1,176 16 6	J. Moore	945 0 0
Wm. Kennedy	1,093 0 0	J. Young	922 6 0
W. Scott	1,078 10 11	R. Allison	908 0 0
S. Sheriff	1,051 13 4	Mackay	894 17 8
J. L. Miller	1,026 12 11½	W. Christie	876 6 4
W. J. Robertson	1,010 0 0	R. Summerbell	865 0 0
R. Brown	970 5 10		

STRATFORD.—For the reconstruction of Messrs. J. T. Hunt & Sons' factory premises, Bow Bridge, Stratford Messrs. Waring & Nicholson, architects, 55, Parliament-street, Westminster :—

J. Marsland	£2,855	Perry & Co.	£2,488
Lapthorne & Co	2,803	W. Gregar & Son	2,434
Wm. Smith	2,650	W. Boulter*	2,364
A. Reed & Son	2,525	* Accepted.	

WATFORD.—For alterations to "The Fox" Inn, High-street, for Messrs. Benskin & Co., of Cannon Brewery. Mr. Chas. P. Ayres, architect, 14, High-street, Watford :—

Waterman	£279 5	T. Turner, Limited	£269 0
Dove & Co.	277 0	Neal (accepted)	254 10
	All of Watford.]		

WATFORD.—For new chemical laboratory and sundry repairs at the Endowed Schools, for the Governors. Mr. Chas P. Ayres, architect, 14, High-street, Watford :—

Neal	£904 8	T. Turner, Limited	£793 0
Dove	868 0	Andrews	782 5
Brightman	845 0	Wiggs	774 0
Waterman	840 0	Clifford & Gough*	762 0
Eames	838 15	* Accepted.	
	[All of Watford.]		

WESTBURY-ON-SEVERN.—For casing the east and south walls (the chancel (externally). Mr. G. H. Godsell, architect, Hereford :—

R. Andrews & Son	£150	W. P. Lewis & Co., Hereford (accepted)	£126
W. Coleman	147		

WEST HYDE (near Rickmansworth).—For erecting new house at Troy Mill, for the Provost and scholars of King's College, Cambridge. Mr. Chas. P. Ayres, architect, 14, High-street, Watford :—

Grange	£925	T. Turner, Limited	£802
Dove & Co.	845	Brown & Sons, Harefield*	788
	* Accepted.		

WHITEMOOR (Cornwall).—For building new schools at Whitemoor, for the St. Stephen's-in-Brannell School Board. Mr. Sampson Hill, architect and surveyor, Redruth :—

Carpenter and Joiner—Thomas Watters, St. Stephen's	£335 0 0
Mason—F. G. Gilbert, St. Stephen's	450 0 0

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J. T. (cannot say; it is a question for a lawyer).—R. W. B.—O. F.

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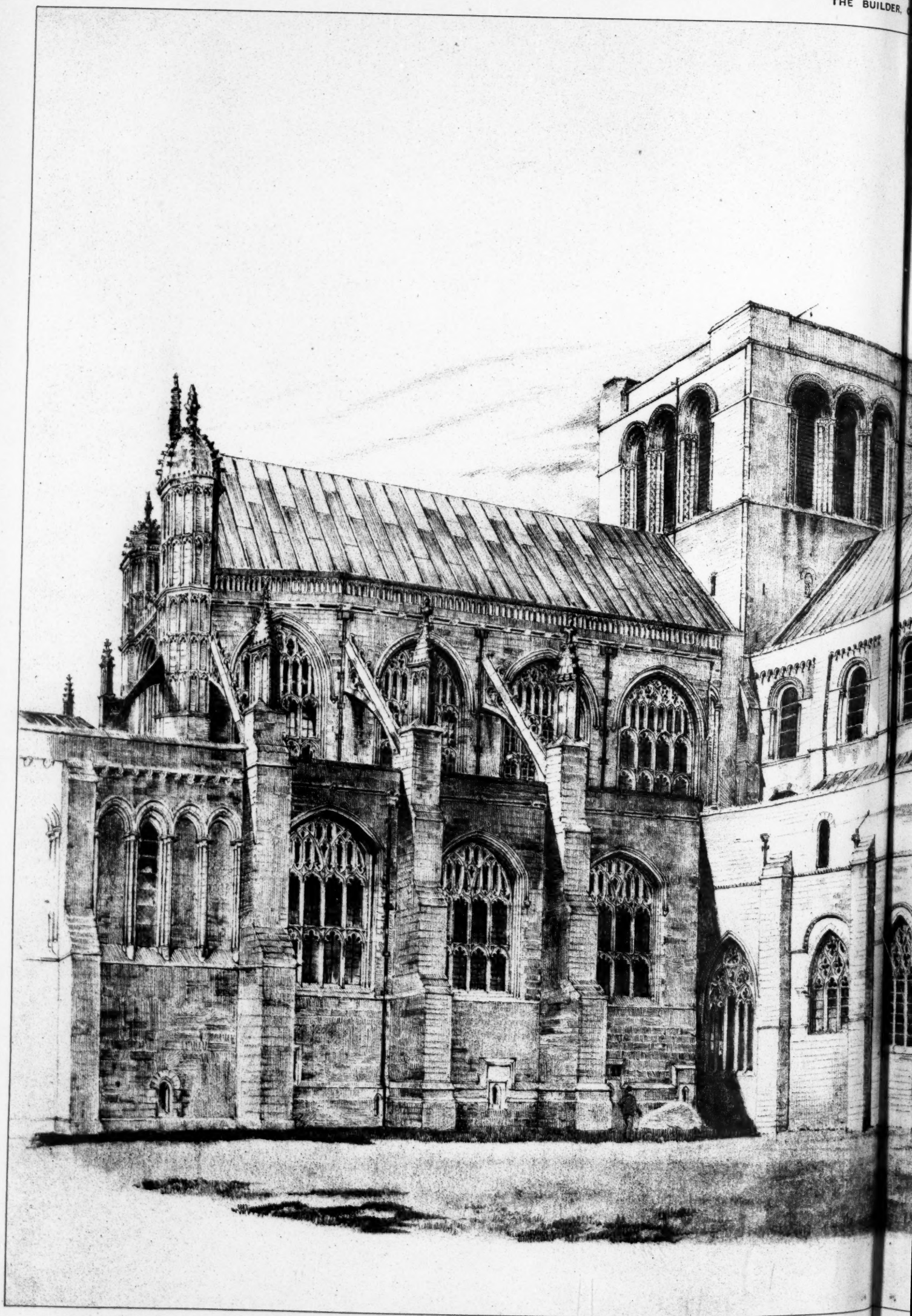
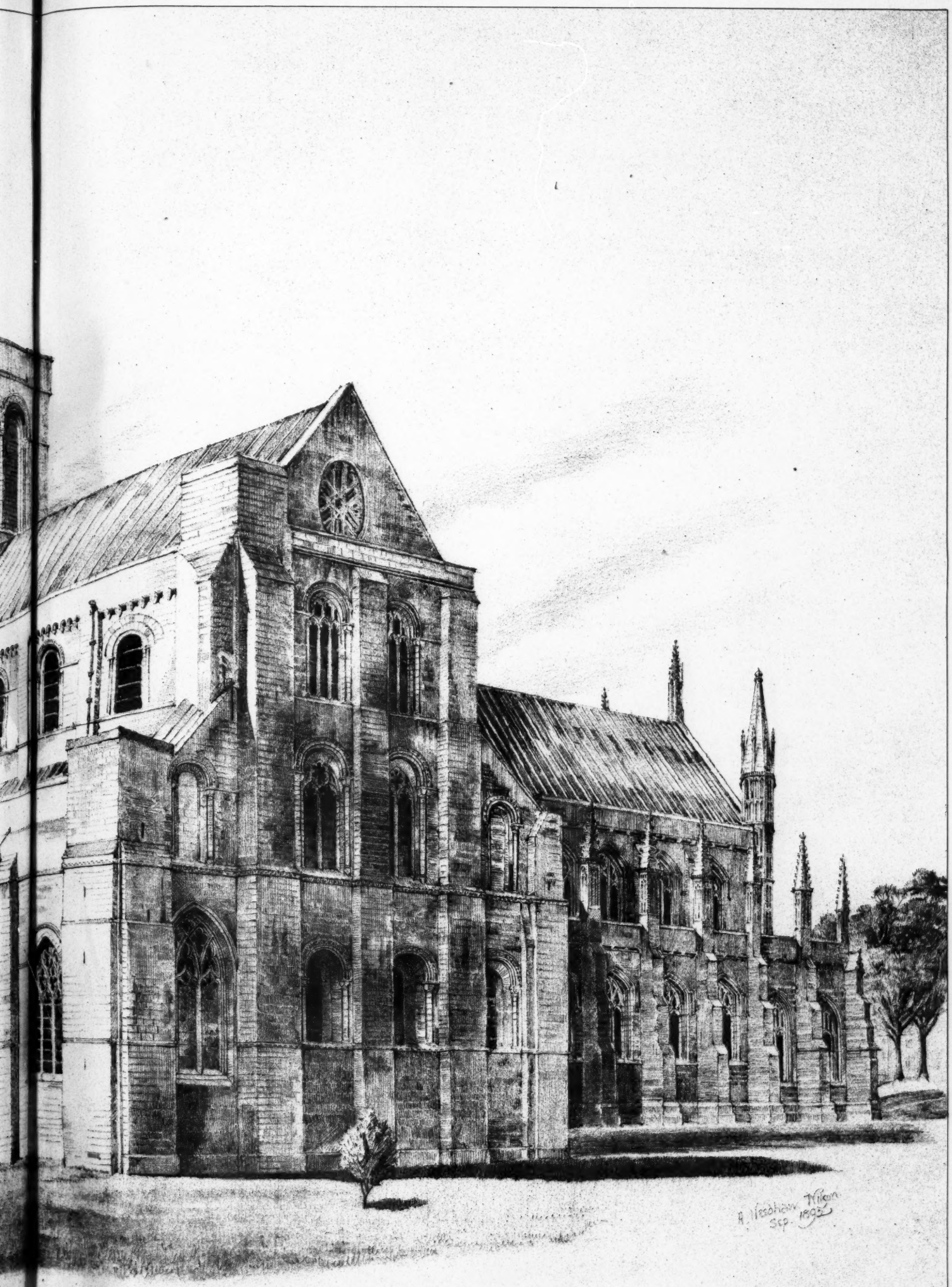


Cathedrals of E[illegible]land

No. 23. WINCHESTER: FROM THE NORTH-E[illegible]—DRA



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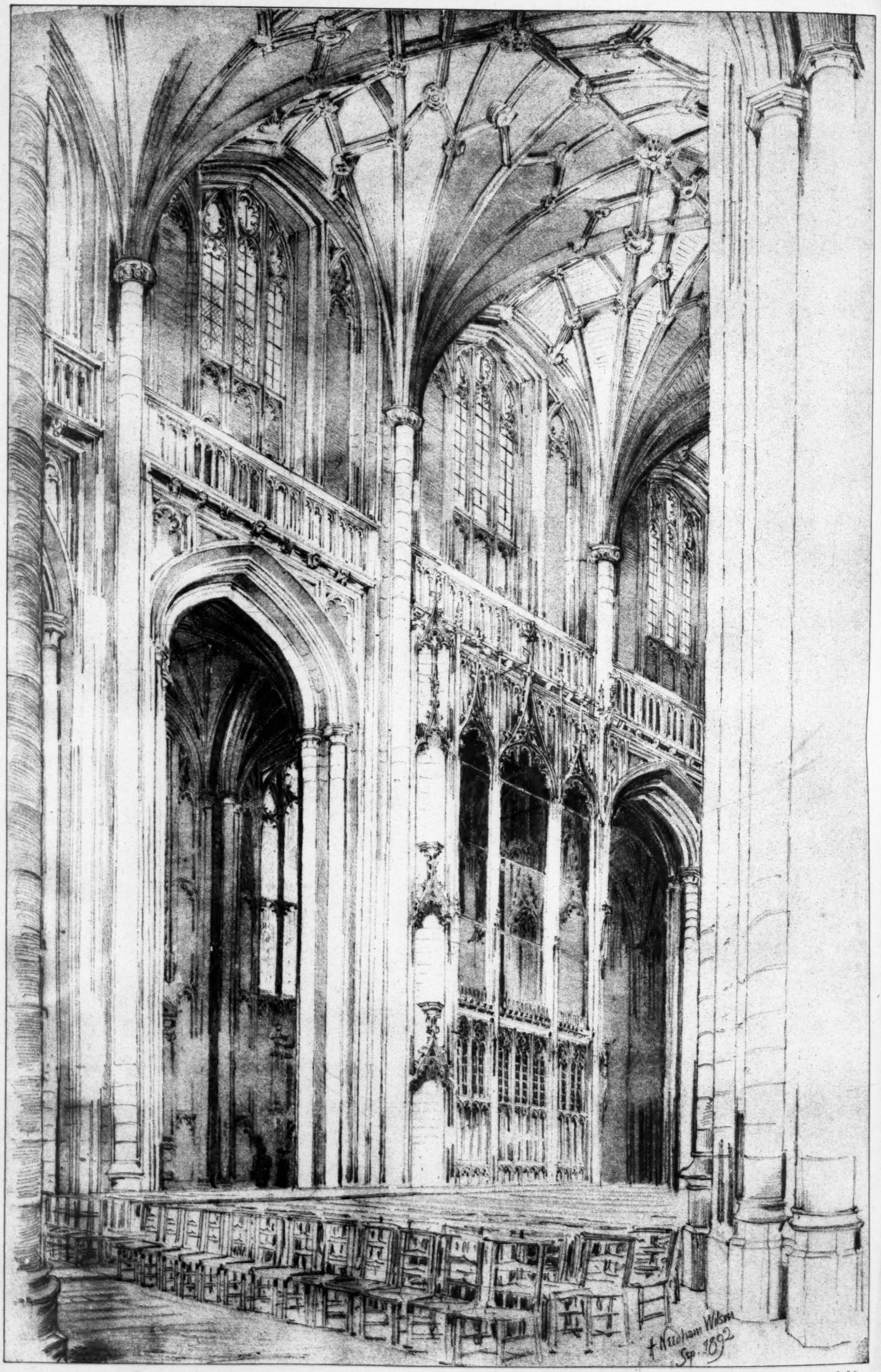
f [illegible]land and Wales.

[illegible]TH-E[illegible]—Drawn by Mr. A. Needham Wilson, A.R.I.B.A.



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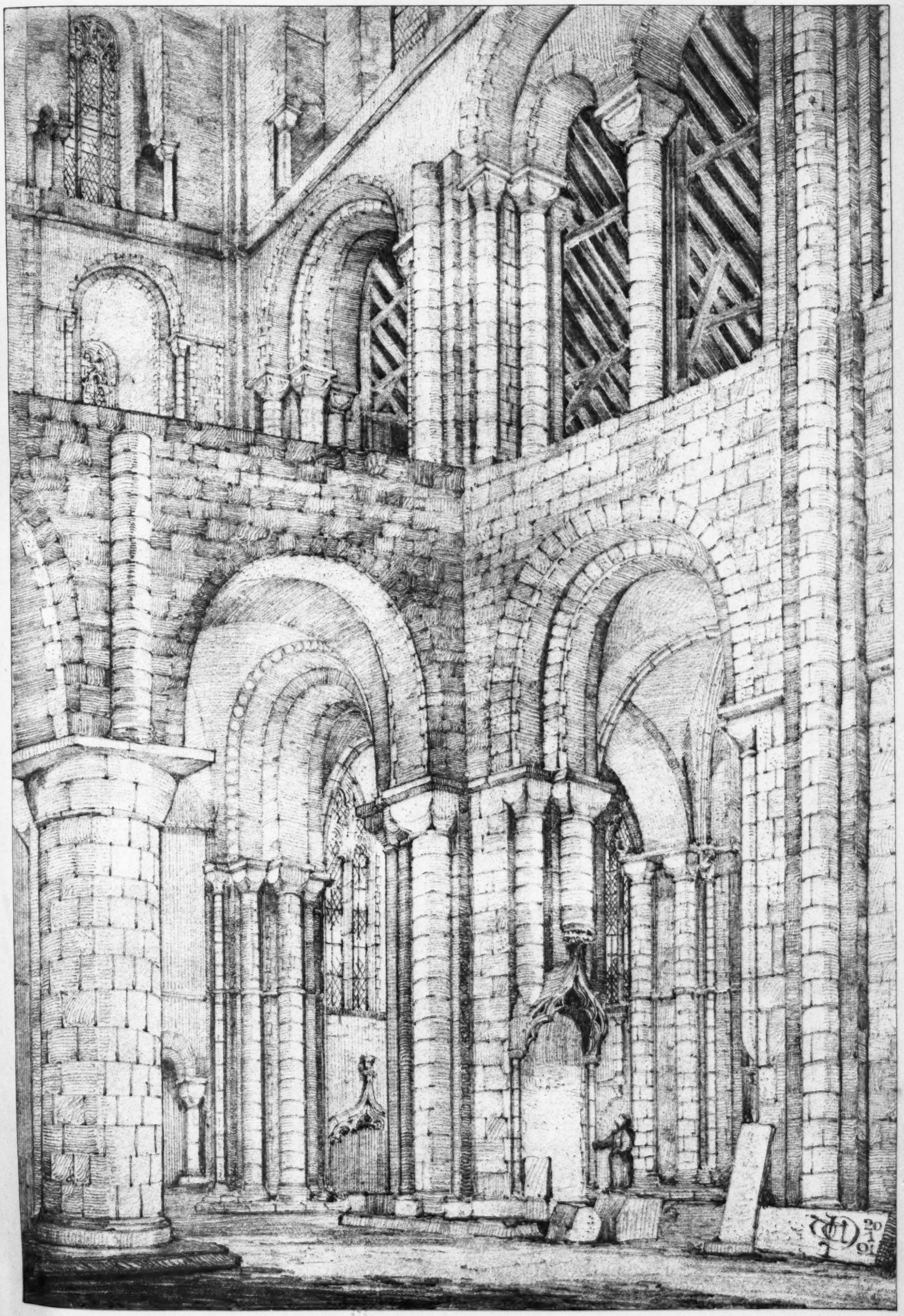
VIEW IN THE NAVE, WINCHESTER CATHEDRAL (LOOKING SOUTH-WEST).—Drawn by Mr. A. Needham Wilson, A.R.I.B.A.



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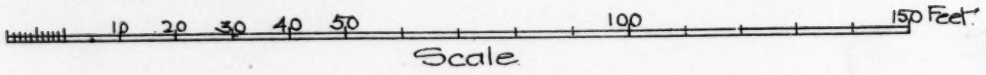
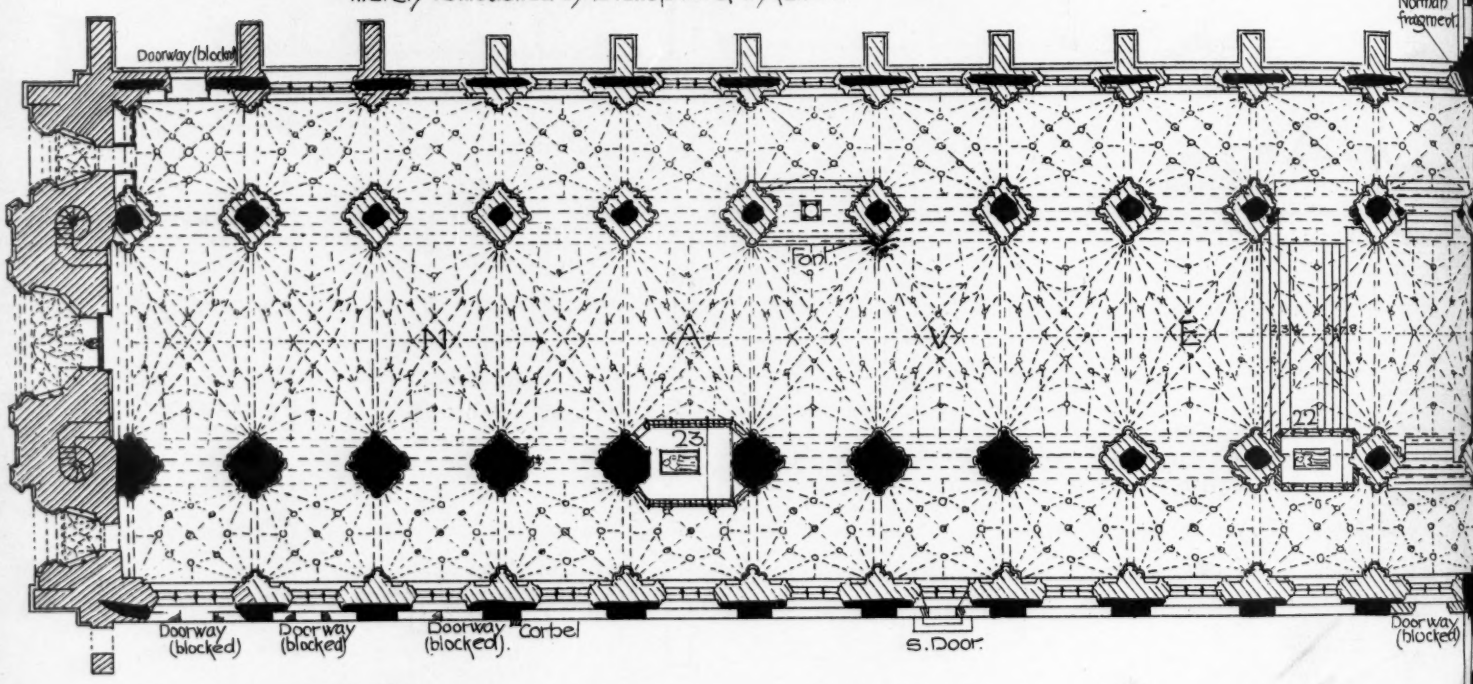
THE NORTH TRANSEPT, WINCHESTER CATHEDRAL.—Drawn by Mr. W. A. Pite, F.R.I.B.A

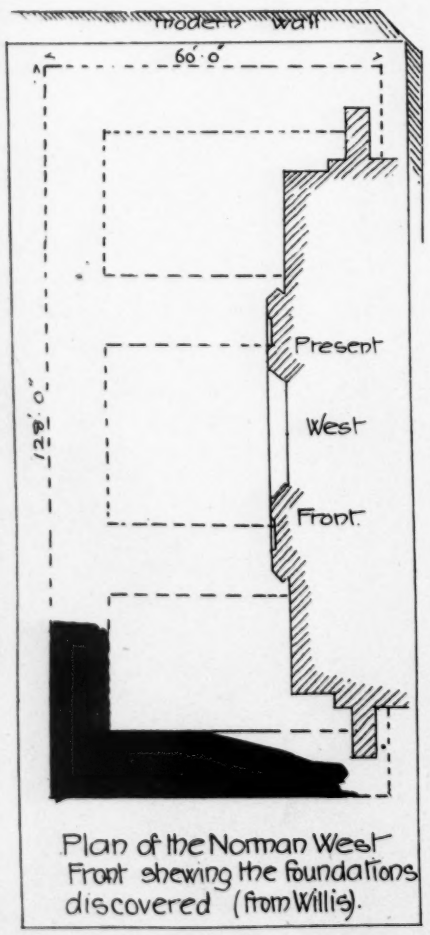
WINCHESTER CATHEDRAL

GROUND PLAN.



Note: The columns of south arcade of Nave shewn black are those given by Prof. Willis as being Norman masonry throughout, the mouldings merely remodelled by Bishop Wm of Wykeham.



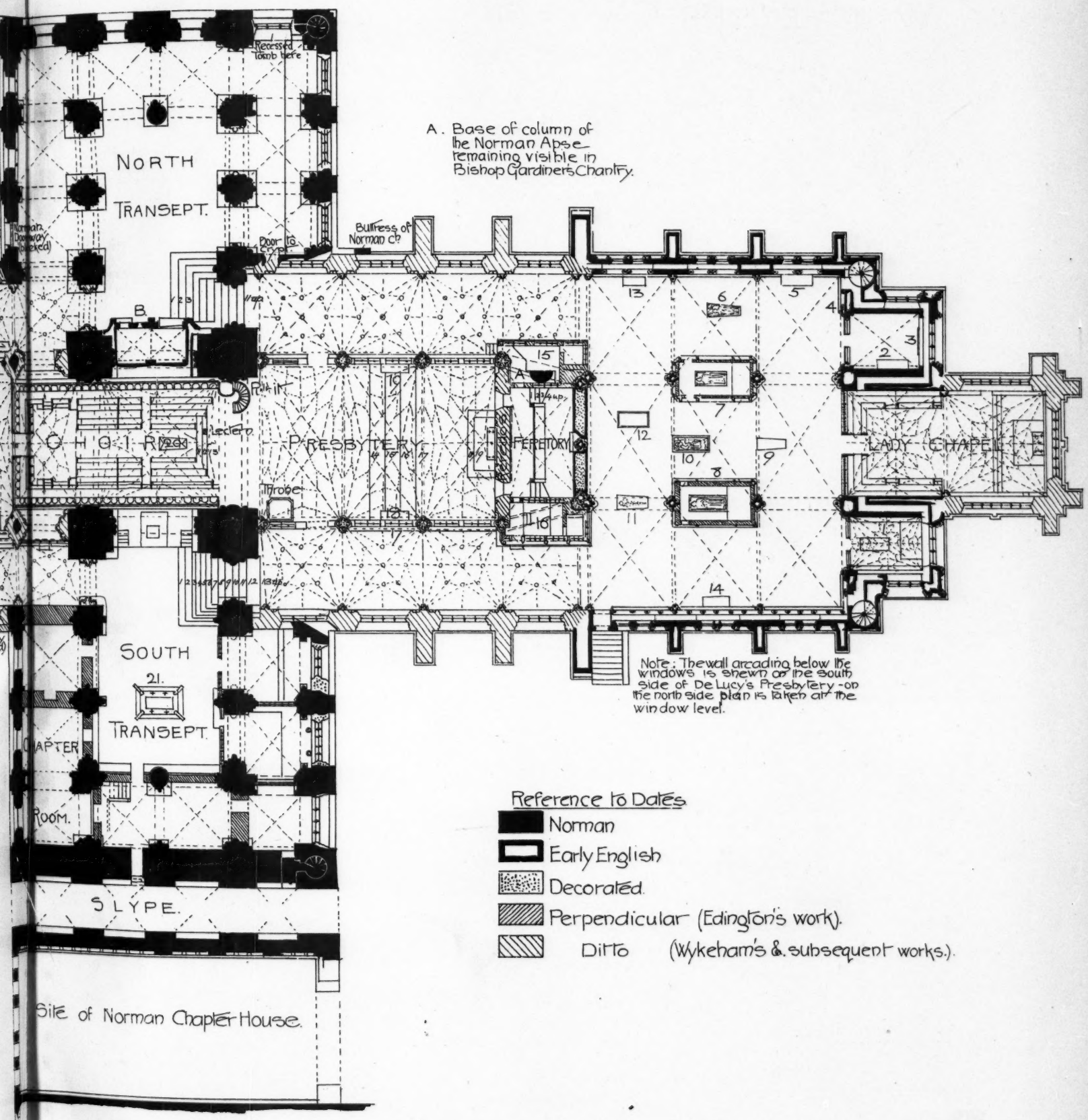


Plan of the Norman West Front shewing the foundations discovered (from Willis).

Site of the Cloister Quadrangle.

Monuments.

1. Chapel & Tomb of Bishop Thos. Langton (1493-1501).
2. R. Weston, Earl of Portland.
3. Portion of a tomb in wall.
4. Effigy in a vesica.
5. Monument to Masson family (1609).
6. Effigy of a Bishop.
7. Chantry & Tomb of Bishop Wm Wayneflete (1447-1486).
8. " " " " Cardinal Beaufort (1404-1447).
9. Plain Tomb (coffin shaped).
10. Effigy of a knight.
11. Prior Wm de Basynge.
12. Bishop Sumner. (1827-1874).
13. Part of an effigy.
14. Sir John Clobery 1687.
15. Chantry Chapel of Bishop Stephen Gardiner (1531-1555).
16. " " " " Fox (1501-1528).
17. Richard son of Wm the Conqueror.
18. Bishop Courtenay (1492) - Restored.
19. Bishop John de Pontissara.
20. King William Rufus.
21. Bishop Wilberforce.
22. Chantry & Tomb of Bishop Edington.
23. " " " " " William of Wykeham.



Roland W. Paul
Hon. A. delt. 1892.

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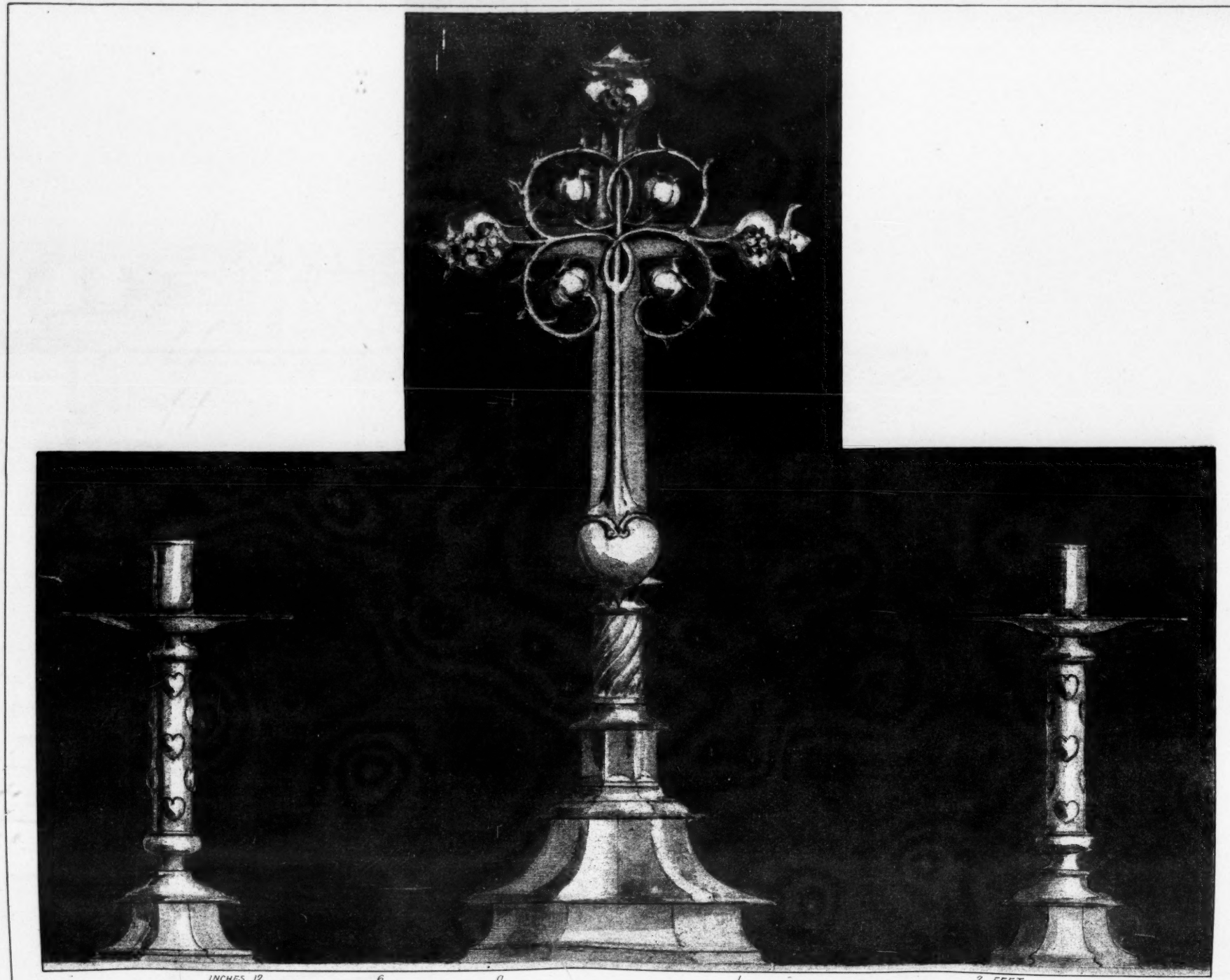

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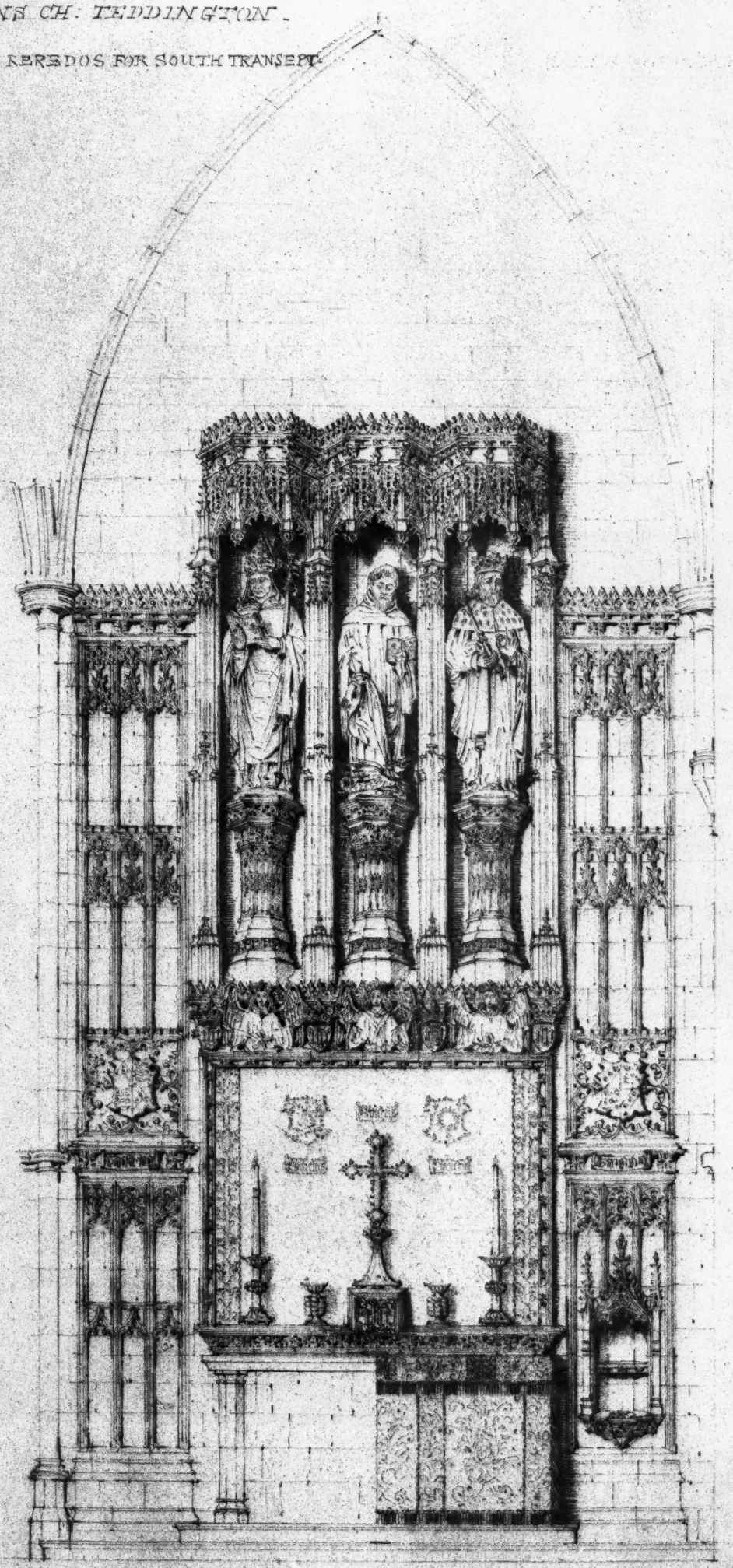
Royal Academy Exhibition, 1892.

ALTAR CROSS AND CANDLESTICKS FOR CARSHALTON CHURCH.—DESIGNED BY MR. REGINALD BLOMFIELD

ST ALBANS CH: TEDDINGTON.

STONE REREDOS FOR SOUTH TRANSEPT.



A.H. Skipworth Architect
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